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THE IMPACT OF EXTENSIVE AUDIT EXPERIENCE ON INTERNAL CONTROL EVALUATION

A dissertation submitted to the Department of Accounting and Finance, University of Tasmania, in partial fulfilment of the requirements for the degree of Master of Commerce.

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April 1997

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ACKNOWLEDEGMENTS

My sincere appreciation extends to my supervisor, Professor Jayne Godfrey, from whose comments, inputs and patience I have benefited immensely. My special thanks also go to Professor Jim Lampe, Professor Alan Mayper and other members of the Department who have provided helpful comments and invaluable assistance throughout the process.

Many thanks go to the anonymous participants of the questionnaire, as well as the participating institutions, all of whom made this study possible.

I would also like to take this opportunity to pay tribute to my family, especially my parents, who saw me through the completion of this dissertation with their wholehearted encouragement and support.

ABSTRACT

This study investigates the effect of extensive internal control audit experience on internal control evaluation. Prior studies have examined the effect of industry experience on specific audit knowledge and the effect of general audit experience on internal control knowledge/performance. However, there has been no known study that examines the effect of extensive internal control audit experience on multiple measures of internal control performance. Extensive internal control audit experience includes compliance based audit experience and financial institution audit experience. Auditors with predominantly compliance based audit experience perform a higher level of compliance testing compared to auditors with predominantly substantive based audit experience. Auditors with financial institution audit experience are more frequently exposed to internal control review due to the audit requirement specified in AGS 1008, *Audit Implications of Reserve Bank Prudential Reporting Requirements.* Due to the frequent exposure to internal control review, auditors with these extensive audit experiences are expected to attain a higher level of knowledge accuracy, consensus between subjects and self insight within subjects. The study also examines the effect of the level of knowledge on internal control evaluation. It is predicted that subjects with a higher level of knowledge will attain a higher level of consensus and self insight.

Results indicate that there are significant differences in the levels of knowledge accuracy, consensus and self insight between student and auditor subjects except for the level of consensus between auditors with predominantly substantive based audit experience and students. Auditors with predominantly compliance based audit

experience exhibit a significantly higher level of consensus compared to auditors with predominantly substantive audit experience but neither a higher level of knowledge accuracy nor self insight. There are no significant differences in the performance of auditors with and without financial institution experience. Furthermore, there are no significant differences in the level of accuracy of consensus and self insight between the high knowledge group and the low knowledge group.

The results indicate that compliance based audit experience may be a useful factor in training an auditor to become an expert in internal control evaluations, as evidenced by firstly, the significant differences in the level of consensus between auditors with compliance based audit experience and auditors with substantive based audit experience; and secondly, the lack of significant difference in the level of consensus between auditors with predominantly substantive audit experience and students. Furthermore, it is clear that some experience as opposed to no experience plays a key role in the accumulation of knowledge and performance of internal control evaluation.

CHAPTER 1 : INTRODUCTION

OBJECTIVE

This study evaluates whether extensive internal control experience enhances the development of a more accurate internal control knowledge relative to internal control knowledge acquired through general internal control experience. It also investigates if a more accurate level of knowledge is associated with a higher level of consensus between auditors' internal control evaluations and a higher level of self insight within auditors' assessments of their internal control evaluations.

Accuracy refers to the correspondence between a decision maker's prediction and the actual realization (Murray and Regel 1992, p. 127). In this study, accuracy is a measure of internal control knowledge as derived from an internal control objective test. The test requires respondents to determine which of the several responses provides a correct evaluation of internal control adequacy. Accurate knowledge is assessed as involving correct responses to the test. Consensus relates to the extent to which different individuals agree in their assessments and is expressed as agreement between pairs of subjects (Ashton 1985, pp. 174-175). Judgement insight relates to the degree of self insight into the relative weighting of internal control indicators of the internal control task within individual auditors (Hamilton and Wright 1982, p. 757).

The extensive internal control experiences that are examined in the study include:

1. audit experience where greater reliance is placed on the client's internal control structure; and
2. audit experience with financial institutions in Australia.

According to Bedard (1989, p. 122), " ... through experience, expert auditors may have developed more complete knowledge, better cross-reference and better memory organisation ... ". Particularly, auditors of clients with reliable internal control structures perform more internal control reviews compared to auditors of clients with less reliable internal control structure. Furthermore, in view of the emphasis placed on reporting internal control adequacy as required by Auditing Guidance Statements AGS 1008, *Audit Implications of Reserve Bank Prudential Reporting Requirements*[1], where there is an emphasis on compliance testing, auditors of financial institutions are more exposed to internal control reviews than are auditors of non-financial institutions. In view of the more frequent exposure to internal control evaluation, auditors with either of the above extensive internal control audit experience should develop a higher level of accuracy in internal control knowledge and possess greater expertise to perform internal control evaluation compared to auditors with only general audit experience.[2]

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[1] Auditing Guidance Statement AGS 1008, *Audit Implications of Reserve Bank Prudential Reporting Requirements*, requires auditors of financial institutions to report specifically on internal control adequacy in addition to reporting the traditional opinions on the truth and fairness of the financial statements. Internal controls means management's philosophy and operating style, and all the policies and procedures adopted by management to assist in achieving the entity's objectives (Statement of Auditing Standard AUS 402, Risk Assessments and *Internal Controls*, para .10).

[2] While auditors of financial institutions are more exposed to writing internal control review reports, that does not necessarily mean that they are exposed to more internal control reviews compared to auditors who are not required to submit internal control review reports. However, it is assumed that with the additional internal control reporting requirement, the auditors would pay more attention to the internal control review function. Therefore, the internal control reporting requirement is expected to have an indirect effect on the knowledge and performance of internal control reviews *via* the additional attention paid to internal control reviews.

Hamilton and Wright (1982, p. 757) stated that:

> "a major assumption made is that a primary determinant of improved expertise in an area of expert judgement is experience. Measures of improved expertise include consensus of judgements, stability of judgements, relative weighting of information, and subjects' degree of self insight into their relative utilisation of information".

This study does not directly adopt the Hamilton and Wright assumption, but applies the model developed by Libby and Tan (1994). The Libby and Tan (1994) expertise model assumes a direct experience effect on knowledge and subsequently, a direct knowledge effect on performance. This study tests whether greater experience leads to greater accuracy in knowledge and further evaluates the assumption of a knowledge effect on consensus and self insight of the internal control task. Hamilton and Wright (1982) tested for the existence of a direct experience effect on performance as measured by the levels of consensus and self insight. This study extends Hamilton and Wright (1982) by also testing for a direct experience effect on knowledge accuracy and a consequential indirect knowledge effect on consensus and self insight.

Auditors who have extensive internal control experience are more exposed to internal control reviews and therefore, are expected to be experts at internal control evaluations. In contrast, auditors with general experience but lacking in extensive internal control experience are less exposed to internal control reviews and are expected to possess less expertise in internal control evaluations. Students with no audit experience have no exposure to internal control reviews and are, by definition, novices. Experts are expected to attain a higher level of accuracy in internal control knowledge, a higher level of consensus and greater self insight in internal control evaluations compared to the non-experts and novices.

This study investigates the linkage between extensive internal control experience and internal control knowledge/performance, which has not been examined in previous studies. Extensive internal control experience includes audit experience of clients with a reliable internal control structure and financial institution audit experience.[3] The effect of general experience is also examined. Students, who have less general audit experience are expected to have less accurate internal control knowledge, a lower level of consensus in their evaluations of internal controls and possess a lower level of self insight in their internal control evaluations than auditors with general experience.

MOTIVATION

The effect of extensive internal control experience on auditors' internal control knowledge/performance has been selected as the focus of this study for three reasons. First, the issue is important since internal control knowledge/performance has the potential to significantly affect the effectiveness and efficiency of audits. Auditors generally evaluate the strength of the internal control in order to determine the extent of audit work necessary for a particular client engagement (Gaumnitz et al 1982, p. 745). The primary purpose of the internal control review is to enable the auditor to determine the nature, the timing and the extent of audit procedures to be applied (Ashton 1974, p. 144). In a competitive environment, it is important that an accurate

[3] Financial institution audit experience can also be described as specific audit experience. The specific nature of the audit is attributable to the specific nature of its operations, transactions and financial statement presentation which is dissimilar to the other industries. However, for the purposes of this thesis, financial institution audit experience will be classified as extensive audit experience. Compared to substantive based and non-financial institution audits, both complianced based and financial institution audits require more extensive internal control reviews. As such, they are termed extensive audit experience.

internal control assessment is conducted as the extent of the subsequent substantive testing procedures is highly dependent on that review. An inaccurate assessment will lead to audit inefficiencies and/or ineffectiveness. Substantive audit work performed will be insufficient when the internal control risk is assessed as lower than actual; or excessive when the internal control risk is assessed as higher than actual.[4] Therefore, internal control assessment is a critical foundation of the audit process.

Second, recent bank failures and business losses have been attributed to the lack of internal control within companies. The Barings debacle in Singapore[5] and the Daiwa bank downfall in Tokyo[6] have received worldwide attention, emphasizing the importance of understanding the factors affecting internal control assessments. The losses suffered by both of the above-mentioned financial institutions were caused by unauthorised transactions in derivatives by single traders. The conventional wisdom has been that internal controls in financial institutions were far too tight to permit such scandals from occurring. As such, the events have stunned international financial circles. These and other audit failures have rekindled professional and legislative interest in auditors' responsibilities to assess and/or report on internal control

[4] It is recognised that there will be no resulting inefficiencies in the audit work performed when the actual internal control risk is higher than assessed and no errors have occurred. Less audit work has been performed as there was a low expectation of error occurrence. Refer to Gill G. S. and Cosserat G. W., 1993, p. 258.

[5] Keen (1995, p. 5); Bloomberg and NY Times as reported in *Financial Review*, 12 September 1995. Nick Leeson, a trader with Barings Futures Singapore, incurred losses amounting to US$1.39 billion which brought down Barings, Britain's oldest merchant bank, in February 1995. The losses were uncovered by the auditors but were not identified as fraudulent transactions as the computer entries were faked, bank statements and confirmations were falsified. The apparent accuracy of the transactions and records led the auditors to issue an unqualified audit report. The management of Barings has been criticised for allowing an inexperienced trader such as Leeson to accumulate huge losses and continue to finance his operations despite danger signs.

[6] *The Mercury*, 28 August 1995, p. 23. Toshihide Iguchi, an executive vice president at Daiwa Bank's New York office was charged with falsifying records in connection with US$1.47 billion in losses. Iguchi was accused of eleven years of unauthorised trading.

adequacies.[7] These cases indicate the significance of the external auditors' role in relation to the adequacy of internal control over financial instrument trading.

Third, despite the importance of the issues examined in this study, they have not been researched to date. Prior studies have examined the effect of industry experience on specific audit knowledge[8] and the effect of general audit experience on internal control knowledge/performance.[9] However, there have been no known studies that examine the effect of extensive audit experience on multiple measures of internal control performance. In this study, compliance based audit experience or financial institution audit experience is used as a proxy for extensive internal control audit experience. A reliable internal control structure allows the auditors to place reliance on the client's internal control structure and thus, the audit procedure will be compliance based. Financial institutions are generally assessed as having a higher level of audit risk and thus, are subjected to more extensive compliance audit requirements than are non-financial institutions as evident in the level of regulatory

[7] Refer to Keen (1995, p. 5) whereby past and present personnel of financial institutions and audit firms addressed the important issues arising from the Barings case.

[8] Ashton (1991) investigated the effect of industry experience on error-frequency knowledge. In relation to financial institution, it was hypothesized that more experienced auditors in financial institution audits acquire more accurate financial institution error frequency knowledge through experience and thus, there will be a difference in the accuracy of that knowledge between the more and less experienced auditors. There were no significant results for the experience effect on error frequency knowledge within the banking industry.

[9] Studies of the experience effect, as measured by number of years of experience or tenure, on internal control evaluation include Ashton (1974), Ashton and Brown (1980), Ashton and Kramer (1980), Gaumnitz et al (1982), Hamilton and Wright (1982) and Libby and Tan (1994). However, the results of these prior studies are not conclusive. For a review of studies examining internal control judgements, see Trotman and Wood (1991, pp. 186-187). Refer to Bedard (1989, pp. 117-118) and the literature review chapter of this thesis for the results of the prior research. Plausible reasons for the differing results could be due to differences in the ways in which knowledge was measured (Bonner, Davis and Jackson 1992); or the proxy used to represent expertise. These studies have routinely collected information relating to the years of audit experience that are used as a surrogate for expertise (Bedard, 1989). Other surrogates used in studies of audit experience effects included education background (Bonner, Davis and Jackson, 1992), size of firms audited (Hackenbrack, 1993), industry and number of clients audited (Ashton, 1991). The literature on the measurement of knowledge and the different surrogates of experience used in the various studies are discussed later in this thesis.

monitoring and the level of reporting requirements.[10] Both the above mentioned types of extensive internal control audit experience require more extensive/detailed internal control reviews compared to general audit experience. Exposure to internal control reviews is expected to affect the internal control knowledge and internal control evaluation performance. This study investigates the effect of extensive audit experience on internal control knowledge and performance.

OVERVIEW OF THE METHODOLOGY

The study compares the internal control evaluations of three subject groups:

1) auditors with extensive internal control experience (auditors with financial institution audit experience or auditors with predominantly compliance based audit experience),
2) auditors without extensive internal control experience (auditors with general experience or auditors with predominantly substantive based audit experience); and
3) students with no practical audit experience.

Surveys are used for data collection. The instrument comprises four parts. The first section obtains responses in relation to the internal control objective violated for each of the eight errors/irregularities in an order entry/sales system. This section serves to test the accuracy of the subjects' internal control knowledge by comparing the responses collected from the subjects to the model answers derived by Tubbs (1992, p. 792). The second section requires the subjects to evaluate the strength of the internal

[10] Refer to Auditing Guidance Statement AGS 1008 *Audit Implications of Reserve Bank Prudential Reporting Requirements* and Statement of Auditing Standard AUS 402, *Risk Assessments and Internal Controls*.

control structure of sixteen independent cases on a scale of 1, extremely weak to 7, strong. Each case contains a list of five control statements which have been pre-answered "yes" or "no". There are sixteen responses, 1 per case, for each subject. The responses of the subjects are correlated to determine the level of consensus for each subject and the mean correlation is computed for each group. The levels of consensus in each group are then compared. The third section requires subjects to allocate 100 points across the five internal control statements used in section two. The allocated points relate to the perceived level of importance of each control. The allocation provided here is used to determine the level of self insight in relation to the internal control evaluations made in each of the cases for the second section. The fourth section collects demographic information about the subjects. This information is used to determine each subject's experience, extensive or general, which facilitates the analysis of the responses in the appropriate classification.

FINDINGS

Results indicate that auditors who audit clients with reliable internal control structure (predominantly compliance based audit experience) attain significantly higher levels of consensus in internal control evaluations compared to auditors who audit clients without reliable internal control structure (predominantly substantive based audit experience). The level of knowledge accuracy and self insight do not differ significantly between these two groups of auditors. When compared to students, the auditors with predominantly compliance based audit experience attain higher levels of knowledge accuracy, consensus and self insight. Likewise, auditors with predominantly substantive based audit experience attain significantly higher levels of

knowledge accuracy and self insight but not significantly higher levels of consensus in internal control evaluations than the students.

Although financial institution auditors do not out perform non-financial institution auditors, both financial institution and non-financial institution auditors exhibit higher levels of knowledge accuracy, consensus and self insight in internal control evaluations compared to students.

Prior research indicates that experience is a factor in determining the level of expertise. The results here not only confirm the findings of prior research but also extend prior research by identifying compliance based audit experience as a determinant of expertise in internal control evaluation.

SIGNIFICANCE

The outcome of the study has several implications. First, this study provides evidence that auditors with extensive internal control experience, measured by compliance based audit experience, exhibit a higher level of expertise in relation to the level of consensus in their internal control evaluations. As such, auditors could be assigned to clients whose audits are primarily compliance based, (i.e. with a reliable internal control structure) to develop their internal control knowledge and internal control evaluation capabilities.

Second, the results provide justification for accounting firms to supplement the training needs of auditors with predominantly substantive based audit experience to develop their knowledge and performance in internal control evaluation.

Third, equipped with a level of expertise in internal control evaluation, auditors with predominantly compliance based audit experience could command a higher salary and better promotional opportunities than auditors with predominantly substantive audit experience, *ceteris paribus*.

ORGANISATION OF DISSERTATION

The rest of the thesis is organised as follows. Chapter 2 comprises a discussion of the institutional background in relation to internal controls and financial institutions. This is followed by the literature review in Chapter 3 and; the theoretical model and hypotheses development in Chapter 4. The methodology is then outlined in Chapter 5 and the results are presented in Chapter 6. Chapter 7 provides a summary and discussion of the study.

CHAPTER 2 : INSTITUTIONAL BACKGROUND

INTRODUCTION

This chapter provides an overview of:

1) the regulatory auditing requirements in relation to internal control reviews,

2) the regulation of financial institutions, and

3) the reporting requirement of internal control adequacy in financial institutions.

This overview emphasizes the importance of internal controls within financial institutions, thus emphasising the significance of the research issue to auditors, auditees and other beneficiaries of the audit process.

INTERNAL CONTROL

In Australia, Statement of Auditing Standard AUS 402, *Risk Assessments and Internal Controls*, states that " ... auditors shall obtain an understanding of the internal control structure sufficient to plan the audit and develop an effective audit approach. The auditor should use professional judgement to assess audit risk and to design audit procedures to ensure it is reduced to an acceptable low level ... (para .02)". An effective internal control structure assists management in ensuring that, as far as practical, the conduct of business is orderly and efficient (para .15). Consequently, auditors can rely on the client's internal control structure to reduce their substantive work.

The internal control structure consists of the control environment, accounting system and control procedures (AUS 402, para .10). An understanding of each is required in order to assess audit risk using the audit risk model, which is derived from AUS 306 and UAS 402), in which AR = IR X CR X DR where AR is audit risk, IR is inherent risk, CR is control risk and DR is detection risk. Assuming auditors are prepared to accept only a given level of audit risk, an understanding of the internal control structure is required to determine the level of reliance on the auditee's internal control structure and the amount of substantive testing required to form the audit opinion.

There is an inverse relationship between audit risk and the amount of evidence needed to support the auditor's opinion on the financial report, i.e. the lower the level of audit risk to be achieved, the greater the amount of evidence needed.[11] Conversely, inherent and control risks are directly related to the amount of evidence needed.

According to AUS 402 (para .34):

> " ... When control risk is assessed as high, the auditor places emphasis on obtaining evidence through the performance of substantive procedures...".

Furthermore, according to AUS 402 (para .39):

> " ... The auditor should obtain audit evidence through tests of control to support any assessment of control risk that is less than high. The lower the assessment of control risk, the more support the auditor should obtain that the internal control structure is suitably designed and operating effectively..."

Less evidence is needed when inherent and control risks are low because in such cases detection risk can be high while a given level of audit risk is achieved, nonetheless, by

[11] Gill and Cosserat (1993, p. 189).

virtue of low detection or internal control risks. When control risk is accurately assessed as high, the auditor is able to expand substantive procedures and, thereby, reduce detection risk in order to maintain a proper level of total audit risk. On the other hand, if control risk is accurately assessed to be low, the auditor can place reliance on the client's internal control structure and perform less extensive substantive procedures in order to achieve greater audit efficiency whilst keeping total audit risk at an acceptably low level.[12]

Benefits accrue to the client as the pricing of the audit service is dependent upon the amount of work and level of tests that are performed by the auditors. Once the fee has been set or a constraint on the amount of audit fee exists, auditors need to identify the most cost efficient method of performing audit procedures to derive the best recovery for the audit. Inaccurate assessments of control risk lead to more ineffective or inefficient audits. The greater the accuracy of the control risk assessment, the greater the benefits to both the client and the auditor.

Various studies and commissions in the area of corporate governance have also addressed the internal control issue. In 1978, the Cohen Report recommended that management should be required to report on internal control with attestation of the report by auditors. Some ten years later, the Treadway Commission (US, 1987) renewed the call for management reports on the effectiveness of internal control and acknowledged management's responsibility for establishing, monitoring, evaluating

[12] ibid. Auditors may perform fewer numbers of more economical substantive procedures; fewer numbers of lesser economical substantive procedures or greater numbers of more economical procedures.

and reporting on the internal control structure.[13] In 1988, Statement of Accounting Standard, SAS 55, which dealt specifically with internal control risk assessment issues, was issued in the US. In 1992, there was also an abundance of interest in internal control issues exhibited by organisations in various countries, such as the Cadbury Committee (UK), the Ryan Commission (Ireland) and the report on *Audit Expectations Gap in the United Kingdom* issued by The Institute of Chartered Accountants in England and Wales (UK).

The ***Cadbury Committee*** attempted to allocate responsibility for ensuring the existence of an adequate internal control structure between the Board of Directors and auditors. The committee recommended that directors should report on the effectiveness of the internal control system and that the auditors should attest to their statement.[14] Extending the concept of director's responsibility, the ***Ryan Commission*** asserted that the directors, regardless of the company size, have the responsibility of maintaining a system of internal control which has been designed to give reasonable assurance that transactions are executed in accordance with management's authorisation, that assets are safeguarded, that fraud is prevented and that proper financial records are maintained.[15] ***The Audit Expectations Gap in the United Kingdom*** issued by The Institute of Chartered Accountants in England and Wales expanded the auditor's scope of responsibility from a credibility assessment function

[13] The Australian Society of CPAs and Institute of Chartered Accountants in Australia. 1993. *A Research Study on Financial Reporting and Auditing - Bridging the Expectation Gap.* Australia: 76.
[14] Committee on the Financial Aspects of Corporate Governance. 1992. *Report of the Committee on the Financial Aspects of Corporate Governance.* Cadbury Committee. London: Gee and Co. Ltd: 5.
[15] The Institute of Chartered Accountants in Ireland. 1992. *Report of the Commission of Inquiry into the Expectations of Users of Published Financial Statements.* Ryan Commission. Dublin: ICAI: 81.

to one of evaluating and reporting on the standards of a company's internal control system and its operational performance.[16]

Within Australia, the importance of internal control in the auditing environment is reflected not only in professional guidance but also in the recent judgement in *Daniels & Ors* v *AWA Ltd.*[17] In this case, the defendants and the banks submitted that "no monitoring policy worthy of the name was laid down" such that there was a distinct lack of an internal control structure relating to monitoring of foreign exchange activities.[18] It was left wholly to senior management to determine and to implement what they thought was appropriate in relation to the foreign exchange transactions. Having determined the lack of an adequate internal control structure, the auditors did not perform further compliance work. The defendants in this case conceded that a duty may arise for the auditors to report on internal control weaknesses if to do so was incidental to the performance of a statutory audit.

Given that there is no guidance on the requirements to inform the directors when internal control weakness are uncovered during the audit process, the auditors were thus not obligated to report on the internal control weaknesses. Roger C J (1992, p. 962) was of the opinion that:

> " ... as a result of the auditor's study and evaluation of internal control and other audit procedures, the auditor may become aware of weaknesses in internal control. For the benefit of the client, the auditor should make management aware, on a timely basis, of material weaknesses which have come to his attention. Such weaknesses are usually communicated in writing. It is important to indicate in the letter addressed to the management that it discusses only weakness which have come to the attention of the auditor as a result of his

[16] Humphrey et al (1992, p. 83).
[17] (1995) 13 ACLC pp. 614-743.
[18] (1992) 10 ACLC p. 948.

audit and that his examination has not been designed to determine the adequacy of internal control for management purposes ... ".

In Australia, a potential benefit accrues to the shareholder from the reporting on internal control procedures. The reporting requirement ensures at least an annual review of the internal control structure. Any internal control weaknesses uncovered during the review would be brought to the attention of the management which provides an avenue for improvement of the internal control structure. This acts as an added protection against the massive losses suffered when inadequate controls allow for fraud. In turn, the reporting on internal control adequacy could mitigate the eventual impact of the failure of organisations such as in the Barings and Daiwa cases.

However, it should be noted that rational investors are usually more concerned with their dividend returns and capital gains than the well being of the company, *per se*. Although institutional investors generally have resources to be equipped with more information compared to the individual investors, institutional investors have generally taken a non-interventionist approach to the management of public companies and have deliberately chosen to "vote with their feet".[19] This is in accordance with portfolio theory whereby investors are likely to diversify their risk by investing in a variety of firms.[20] Furthermore, costs such as audit costs and lobbying costs may deter investors from imposing any additional reporting requirements on the company. Therefore, it is expected that the investors will not voluntarily require the companies to be subjected to internal control audits and will leave the internal control requirement in the hands of the legislators.

[19] Tomasic and Bottomly (1993, p. 154).
[20] Watts and Zimmerman (1986, p. 194).

FINANCIAL INSTITUTIONS

According to Jeffrey (1992, p. 808), auditors are accountable for their judgements to superiors, to the client and to the outside users of financial statements. In the case of clients within a regulated industry, such as financial institutions, the auditors are not only accountable to regulators such as the Australian Securities Commission and the Australian Stock Exchange, they also accountable to other regulators such as the Reserve Bank of Australia.

Various reasons for the increased monitoring imposed on financial institutions are possible. First, the level of ignorance among managers of companies using complex transactions puts shareholders in vulnerable positions should both the external auditors and management lack understanding of the transactions and the risks involved.[21] Second, the banking system is perceived to be too important to the Australian economy to be left unmonitored. The public is protected by close monitoring *via* regulation.[22] Furthermore, there would be high levels of publicity and associated firm (auditor and auditee) reputation damage should there be an audit failure in this industry. There could also be adverse effects on the country's economy and/or financial reputation as evident in the recent Barings case (Keen 1995, p. 5). In *The Report of the Board of Banking Supervision Inquiry into the Circumstances of the Collapse of Baring*, it was acknowledged that " ... there is a need for improvement in the existing framework of regulation in the UK ... ".[23] In Australia, the Barings disaster has made companies and regulatory authorities wary of the use of derivatives.

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[21] The issue on the lack of understanding of the derivative products were raised in two articles, Heywood (1995) and Keen (1995).

[22] Refer to The *Commonwealth Bank Act 1951*, The *Commonwealth Bank Act 1959*, The *Reserve Bank Act 1959*, The *Banking Act 1959-89*.

A series of accounting exposure drafts and guidance papers have been released or revised since the Baring collapse, reinforcing the intensity and urgency of this issue.[24] In view of the extent of public debate about the cause of derivative disasters attributed to the lack of internal control and the increased attention paid to the internal control structures of regulated industries, it is likely that a more cautious approach would be adopted in the conduct of audits in relation to internal control in financial institutions.

INTERNAL CONTROL ADEQUACY IN FINANCIAL INSTITUTIONS

Due to the high volume of similar transactions that takes place in financial institutions, audit strategies tend to have a heavier emphasis on tests of controls than on substantive testing. The focus of internal control in relation to the impact of its reliance on audit work has now been expanded, thereby increasing its importance in the audit process. Audit standards promulgated in the USA have extended the purpose of the internal accounting control review to include consideration of material internal accounting control weaknesses (IACWs) and communication of these IACWs and their effects to the client's board of directors. Other standards also require the auditor to disclose material IACWs in engagements in which an opinion concerning the adequacy of IAC is rendered by the auditor (Mayper 1982, p. 773). There is a similar requirement in Australia as stipulated in AGS 1008 but only in relation to financial institutions.

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[23] Return to an Order of the Honourable The House of Commons (1996, p. 251).

[24] Examples include *Exposure draft 65*, Presentation and Disclosure of Financial Instruments which is now approved for issue as an accounting standard and the report , *Auditing the Treasury Function*, produced by the Australian Society of CPAs which offers guidance and comprehensive check points for auditing derivatives.

One of the financial institution auditor's duties, according to AGS 1008 (para .12 and .13(a)), is to "express an opinion as to whether, based on professional observation and experience, the bank's internal management systems and controls are generally adequate". The auditor's report to the client bank on this specific matter will then be forwarded to the Reserve Bank. Furthermore, Auditing Guidance Statement AGS 1010, *Audit Obligations of the Financial Institutions Scheme*, states that " ... the Prudential Standards, pursuant to Section 285(10), require an auditor of a Building Society or Credit Union to provide a report of compliance on ... internal controls (annually) ... " (para .09b).

The 1989 prudential supervision provisions of the *Banking Act* were included to deal with the protection of depositors, to ensure that the banks do not engage in excessively risky behaviour and to keep the Reserve Bank informed of the operations of the banks.[25] The prudential supervision of the banks is without doubt one of the most important functions of the Reserve Bank.[26]

Although the financial industry has undergone substantial deregulation, the financial institutions are still subjected to a higher level of internal control review compared to non-financial institutions. Continuing on this basis, several hypotheses in the current study focus on the effects of financial institution experience on internal control knowledge/performance.

[25] Blay and Clark (1993, p. 39).
[26] ibid.

Guidance provided in AGS 1008 requires auditors of financial institutions to report specifically on internal control adequacy in addition to reporting the traditional opinion on the truth and fairness of the financial statements. The auditors of non-financial institutions are required only to review the internal control of their clients to plan and determine the appropriate nature, timing, and extent of substantive testing. The additional requirement for auditors to express an opinion on the adequacy of the internal control within financial institutions is posited to reinforce the general internal control knowledge and performance for those auditors.

In the USA, private sector financial institutions and corporations are required to obtain annual audits but the auditors have the option of expanding the scope of the control assessment procedures in order to derive an opinion on the adequacy of the internal control procedures. By contrast, public sector organisations receiving more than $100,000 federal financial assistance are required to obtain an audit that reports opinions on the adequacy of internal controls, compliance with laws and regulations as well as the opinion on the fairness of the financial statements. Other private and public sector organisations have the option to expand audit scope and receive an opinion on internal control but very few exercise the option to do so.

SUMMARY

The internal control reporting requirement of auditors or management has been addressed and debated in various countries. The losses and failures such as those suffered by Barings and Daiwa banks have escalated these common concerns. In view of the attention placed on internal control in financial institutions, this study regards

auditors of financial institutions as possessing a level of internal control evaluation expertise greater than that of other auditors.[27]

[27] It must be also be recognised that evidence of financial institution failures may indicate, to the contrary, that auditors of financial institutions lack internal control evaluations expertise.

CHAPTER 3 : LITERATURE REVIEW

INTRODUCTION

This chapter provides an overview of:

1) studies which examined the impact of general experience on internal control performance; and
2) research which later progressed to examine not only the impact of general experience on internal control performance but also the impact of general experience on internal control knowledge and/or ability.

This review assists in the identification of the link between extensive internal control experience and internal control knowledge/performance.

EXPERIENCE EFFECTS ON INTERNAL CONTROL PERFORMANCE

Ashton (1974) studied the judgements made by independent auditors relative to internal control systems. The major purpose of his seminal research was to determine the extent of judgement consistency in the evaluations by individual auditors of a hypothetical internal control situation. It was expected that there would be variations in the judgement by the same auditor at different points in time (consistency) and differences across auditors (consensus). A descriptive model of each auditor's judgements was constructed in order to provide a partial explanation for the extent of inconsistent internal control judgements which might be observed. The experimental task required the subjects to make thirty-two internal control judgements on a scale from one (extremely weak) to six (adequate to strong) as a function of thirty two

different combinations of "yes" and "no" answers to six questions (2^6 combination whereby there are two options for each of the six questions, of which only half are selected for experimentation purposes based on fractional replication).[28] Based on a one-half fractional replication of a 2^6 factorial design, thirty two of the sixty four combinations were chosen as case studies for inclusion in the questionnaire.

Ashton's six questions relate to six payroll internal control indicators (**Table 1** reports an internal control case utilised in his study). Subjects consisted of sixty-three practising auditors who were employed by four accounting firms. The task was administered twice in order to assess the consistency of judgement over time. Two types of consistency were evaluated - consensus (consistency across auditors at the same point in time) and stability (consistency over time for the same auditor using the same data). Results provided experimental evidence that the judgements of the sixty three subjects exhibited a fairly high level of consensus, 0.7. The mean correlation for the high experience group and the low experience group were 0.72 and 0.68 respectively.

[28] Cochran and Cox (1957, pp. 244-249). According to Cochran and Cox (1957, p. 152), using factorial experiments, the magnitude of the task can be reduced by testing only a fraction (e.g. one-half or one-quarter) of the total number of treatment combinations. An experiment which consists of only part of a complete replication allows the investigator to discover the results of the experiments in a more timely and cost effective manner.

TABLE 1 AN EXAMPLE OF AN INTERNAL CONTROL CASE USED IN ASHTON (1974)

	Yes	No
1. Are the tasks of both timekeeping and payment of employees adequately separated from the payroll preparation?		X
2. Are the tasks of both payroll preparation and payment of employee adequately separated from the task of payroll bank account reconciliation?		X
3. Are the names on the payroll checked periodically against the active employee file of the personnel department?		X
4. Are formal procedures established for changing names on the payroll, pay rates and deductions?		X
5. Is the payroll audited by internal auditors?		X
6. Was the internal control over payroll found to be satisfactory during the previous audit?		X

extremely weak	very weak	substantial weakness	some weakness	not quite adequate	adequate to strong
1	2	3	4	5	6

Source : Ashton (1974, An Experimental Study of Internal Control Judgements, *Journal of Accounting Research*, p. 155, Table 1)

Ashton and Kramer (1980, p. 1) extended Ashton (1974) to assess whether students are reasonable surrogates for the practising auditors in tasks involving decision making. Analysis of results focused on the extent to which the two subject groups, students and auditors with no more than three years of experience, differed on several measures of judgement and the extent to which these differences could be explained by experience. The experiment consisted of a student replication of the Ashton (1974) study of internal control judgements by independent auditors. Thirty students were the subjects in this study. The mean correlation for the level of consensus for the student subjects was 0.58. Compared to the 0.72 and 0.68 mean correlation for high and low experience subjects in Ashton (1974), the results implied that having some experience, as opposed to no experience, was more important than the specific amount (one, two or three years) of experience held by auditors. The self insight index for auditor and student subjects were 0.89 and 0.77 respectively and there was a significant positive correlation between years of experience and level of self insight. However, according to Ashton and Kramer (1980, p. 11), " ... eleven of the thirty tests reported revealed statistically significant differences while the other nineteen tests suggest no differences ... If one goes beyond statistical tests and considers the general directionality in the data, it appears that the students were adequate surrogates for the auditors... ".

Ashton and Brown (1980) replicated and further extended this line of research by examining changed cue sets. The task used in the 1980 study differed from that used by Ashton (1974) and Ashton and Kramer (1980) in that two additional cues were added to the six originally used by Ashton (1973), resulting in one hundred and twenty eight cases (2^8 possible combinations of two yes/no options for each of the

eight questions, whereby only half were adopted for the testing purposes based on the factorial replication rationale).[29] The analysis indicated that judgement consensus and insight:

1) are greater for auditors having between one and three years of experience than for auditing students,
2) did not differ for auditors in the one-to-three year experience range, and
3) are greater for auditors having more than three years of experience than for those having less than three years of experience.

Hamilton and Wright (1982) extended studies of auditors' performance on assessments of internal control for payroll systems by including a broader range of experience levels and a larger percentage of relatively experienced auditors. Hamilton and Wright (1982) used a task and situation similar to the one used in Ashton (1974), Ashton and Kramer (1980) and Ashton and Brown (1980). Their study considered explicitly the relationship between:

1. years of experience and
2. judgement consensus, the stability of judgements over time and; the degree of self insight into the relative weighting of internal control indicators.

The consensus levels for the low and high experience groups were 0.73 and 0.71 respectively. The results indicated a low negative correlation between consensus and years of experience (r_s = -0.20), a low positive correlation between self insight and years of experience (r_s = 0.26) and a small difference in the weighting of internal control indicators by the subjects (sum of average ETA coefficients is 0.703, 0.734

[29] Refer to footnote 26.

and 0.773 for student, inexperienced and experienced subjects respectively).

Of the four studies mentioned above, both positive and negative but generally weak relationships between experience and consensus have been found. In relation to self insight, only Hamilton and Wright (1982) found a low positive correlation between experience and level of self insight within the auditor subjects. These prior studies failed to provide consistent support for the belief that increasing audit experience leads to higher levels of expertise in relation to internal control assessments among auditors, although differences were detected between auditors and students.

EXPERIENCE EFFECTS ON KNOWLEDGE AND PERFORMANCE

Bonner and Lewis (1990) noted that most studies of expertise divided subjects into groups of experts and novices on the basis of years of experience or tenure-based titles. Bonner and Lewis (1990) explored a view of expertise in which specific experiences and training create knowledge. They expected knowledge and ability to explain more of the variation in performance than years of audit experience.

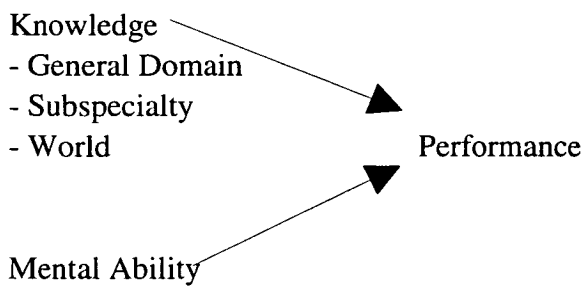
Using their model, **Figure 1** illustrates the effect of knowledge and mental ability on performance whereby knowledge is combined with innate ability to perform specific audit tasks. Three types of knowledge, general domain knowledge, subspecialty knowledge and world knowledge; and an additional type of ability, general problem solving ability, were identified as potential determinants of expertise. Bonner and Lewis (1990) also noted that most of the published studies have examined general

domain knowledge.[30] Their study examined the specific types of knowledge and ability necessary to perform accurately on each of the four audit tasks relating to internal controls, ratio analysis, manipulation of earnings and interest rate swaps.[31] The results showed that more experienced auditors, on average, performed better in the tasks and had more knowledge and ability related to the task. The results further indicated, however, that the general experience variable explained less than 10% of the variance in performance scores. Very specific measures of knowledge or task specific experience and training often provided the best explanations of expertise. For example, the variable that best explained variations in performance of tasks associated with interest rate swaps was having the experience of auditing clients who engaged in such swaps.

[30] According to Bonner and Lewis (1990, p. 3), general domain knowledge is defined as knowledge gained by most persons in a domain through instruction and experience. Subspecialty knowledge is acquired through formal instruction and experience, but only by persons in the subspecialty area. World knowledge is gained through life experience and instruction and is not likely to be possessed equally by persons of equal experience.

[31] In the internal control task, subjects were given a specific weakness in the internal controls over accounts payable. The subjects were required to, first, list two financial statement errors that could occur and not be detected by the control system, then, list two substantive audit procedures that would be useful in detecting such errors. In the ratio analysis task, subjects were given a particular pattern of unexpected deviations in financial ratios and were required to (1) determine a single accounting error that could account for all of the unexpected changes in the ratios, (2) list the accounts affected by the error, (3) state whether the accounts were over or under stated, and (4) explain how errors in those accounts affect the related financial ratios. In the manipulation of earnings task, subjects were required to determine the income effects for the two years involved given a particular pattern of errors in the timing of sales recognition. In the interest rate swap task, subjects were given details about an agreement and were required to name the type of transaction and propose an acceptable accounting treatment for it.

FIGURE 1 EFFECT OF KNOWLEDGE AND MENTAL ABILITY ON PERFORMANCE



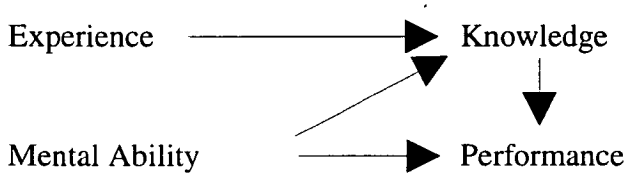
The Bonner and Lewis (1990) conceptual model adapted from Libby and Luft (1993, Determinants of Judgement Performance in Accounting Settings : Ability, Knowledge, Motivation and Environment, *Accounting, Organisations and Society*, p. 433, Fig 2)

Libby and Luft (1993), in a descriptive paper, suggested a more complete model than that examined in Bonner and Lewis (1990). The model recognised that:

1) there are only two classes of inputs in the model (abilities and experiences),
2) these two inputs cause the internal state of knowledge which is an intermediate output variable, and
3) along with the direct effects of abilities, knowledge affects performance (an output variable).

Consequently, one should not expect all experienced auditors to show superior performance on all tasks. The level of expertise in a specific task is dependent on the types of abilities and experiences an auditor possess. **Figure 2** illustrates the effect of experience and mental ability on knowledge and ultimately performance, as modeled by Libby and Luft (1993).

FIGURE 2 THE EFFECT OF EXPERIENCE AND MENTAL ABILITY ON KNOWLEDGE AND PERFORMANCE



Antecedents and consequences of knowledge (Libby and Luft, 1993, Determinants of Judgement Performance in Accounting Settings : Ability, Knowledge, Motivation and Environment, *Accounting, Organisations and Society*, p. 433, Fig 3)

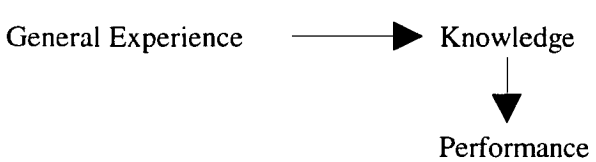
Applying the model in Figure 2 whereby the audit judgement task allows different knowledge and abilities to be acquired, Libby and Tan (1994) constructed separate conceptual models for separate audit tasks. Libby and Tan (1994) extended the Bonner and Lewis (1990) and Libby and Luft (1993) studies by developing a framework to predict the structure and strength of knowledge, ability, experience and performance for different tasks; the internal control task, ratio analysis task, earnings manipulation task and the financial instrument task. The tasks in Libby and Tan (1994) are similar to the tasks in Bonner and Lewis (1990). The internal control task requires the detection of errors arising from deficiencies in the internal control system, and identification of substantive tests that can be used to detect these errors. The ratio analysis task requires the detection of a single low-frequency accounting error that can explain the pattern of ratio changes. The earnings manipulation task requires the identification of a reason for irregularities in the accounts, and the financial instrument task requires the identification and specification of journal entries related to an interest rate swap.

According to Libby and Tan (1994, p. 703),

> "... experience creates opportunities for the acquisition of knowledge, while ability and effort determine the amount of knowledge acquired given that experience. This knowledge acquired, along with ability and effort, then directly affects performance. This performance in one period in turn affects what an individual experiences in the next period ..."

In relation to the internal control task, Libby and Tan (1994) classified the knowledge as moderately complex and as being acquired during the first three years of an auditor's career. Therefore, knowledge and general experience are predicted to have an effect on the performance of the internal control task. Furthermore, the task is described as structured, the problem is well defined, the alternative solutions and relevant information as well specified; and no computations or backward reasoning are required. As such, no effects of problem-solving ability on knowledge or performance are predicted in the model. **Figure 3** describes the Libby and Tan (1994) performance model in relation to the direct effects of general audit experience on internal control knowledge and finally, on performance.

FIGURE 3 EFFECTS OF GENERAL AUDIT EXPERIENCE ON INTERNAL CONTROL KNOWLEDGE AND PERFORMANCE



Model of Performance of Internal Control Evaluation Task (Libby and Tan, 1994, Modeling the Determinants of Audit Expertise, *Accounting, Organisations and Society*, p. 706, Fig 3a)

In Libby and Tan (1994), specific results for the internal control model indicated that general experience, operationalised as months of audit experience, had ***direct*** effects

on performance for the internal control evaluation task which suggested the possibility of automaticity developing from experience. General experience also had an impact on the development of knowledge relevant to task performance. Furthermore, the ability-knowledge link and ability-performance link were not significant which confirmed the prediction that there was no ability effect on performance and knowledge in respect to the internal control task. The knowledge-performance link was significant when self ratings were used as a measure of knowledge but was not significant when knowledge was measured by an objective knowledge test.

The studies cited above classified internal control knowledge as general domain knowledge. Furthermore, only general experience is predicted to have an effect on internal control evaluation knowledge and performance. As indicated in the previous chapter, this study continues to investigate internal control knowledge and performance, but predicts that extensive internal control experience reinforces the internal control knowledge. The level of knowledge has an ultimate effect on the performance of the internal control task. Audit experience of clients with reliable internal control structures and financial institution audit experience serve as two proxies for extensive internal control experience. This concept is explored in more detail in the theoretical model development chapter.

SUMMARY

Early research has generally investigated the effect of experience operationalised by years of experience on internal control judgement based on the instrument developed by Ashton (1974). More recent work has included the knowledge and ability variables

to explain variances in internal control evaluations. To date, there has been no study investigating the effect of extensive audit experience on internal control knowledge and internal control evaluation, where extensive audit experience includes audit experience of clients with reliable internal control structure and financial institution audit experience.

The most predominant instrument that has been utilised in prior studies is the set of hypothetical internal control situations developed by Ashton (1974), whether in the original or modified form. A modified version of the instrument developed by Ashton (1974) is used in this study. Its structure and content are described in detail in Chapter V. The common measures of expertise, such as tenure and years of experience, are also examined to determine the impact of general experience on internal control knowledge/judgement. The following chapter develops hypotheses predicting the nature of this effect.

CHAPTER 4 : THEORETICAL MODEL AND HYPOTHESES DEVELOPMENT

INTRODUCTION

This study extends the internal control model by Libby and Tan (1994) in at least three ways. First, in addition to general experience, a second input variable (extensive internal control experience) is predicted to affect the intermediate variable, internal control knowledge, and the output variable, performance of the internal control task. Second and as a consequence of the first extension, the experience variable is operationalised using compliance based audit experience and financial institution audit experience. These variables have not been operationalised as such in prior research. It is proposed that both types of experience assist in explaining the factors affecting internal control knowledge and performance. Third, consensus has traditionally been treated as a surrogate for accuracy as a performance measure. This study treats accuracy and consensus as different concepts. It links the level of accuracy of internal control knowledge and level of consensus in internal control task performance. It is predicted that high knowledge accuracy leads to high levels of consensus and self insight in the performance of the internal control task.

Prior research has investigated the relation between general experience and internal control knowledge and/or performance. In contrast, this study examines the effects of extensive internal control experience on the internal control knowledge and performance model. This relation is expected to exist due to the need for extensive compliance testing prior to placing reliance on the client's internal control structure,

and the additional emphasis on compliance testing in financial institution audits due to the additional reporting requirement on internal control adequacy in AGS 1008.

EXTENSIVE EXPERIENCE EFFECTS ON KNOWLEDGE AND PERFORMANCE

Most studies of expertise have divided subjects into groups of experts and novices on the basis of years of experience or tenure-based titles (Bonner and Lewis 1990, p. 2). Others have viewed auditor expertise in terms of the kinds of knowledge and ability acquired through variations in:

1) the firm (Gaumnitz et al, 1982; Hamilton and Wright, 1982; Bonner, 1990; and Spires, 1991),
2) industry experience (Ashton, 1991; and Libby and Tan, 1994),
3) client size (Ashton, 1991; and Hackenbrack, 1993).

Different clients present different challenges to their auditors. For clients with adequate internal control structure in place, auditors place a greater reliance on the internal control structure and perform more compliance testing relative to substantive testing. The frequent exposure to internal control reviews is termed compliance based audit experience. The compliance based audit experience, through emphasis on the internal control structure will also reinforce the knowledge of the auditor and enhance the performance of the auditor in relation to internal control audits.

Furthermore, the prudential supervision performed by the Reserve Bank of Australia requires financial institutions to develop an adequate internal control structure. Due to the internal control reporting requirements imposed by the Reserve Bank of Australia

and the adequacy of internal control structure expected to exist in financial institutions, auditors of financial institutions perform more extensive than usual evaluations of internal control structure compared to non-financial institution auditors. According to Tubbs (1992, p. 786),

> "... the development of error knowledge is likely to be a function of specific audit experiences, discussion of audits with colleagues, supervision and review of work by superiors, case materials used in training programs, the following of audit plans, and the use of audit guides. Advanced activities such as the supervision of subordinates and designing actual audit plans are likely to reinforce and, perhaps, enhance error knowledge..."

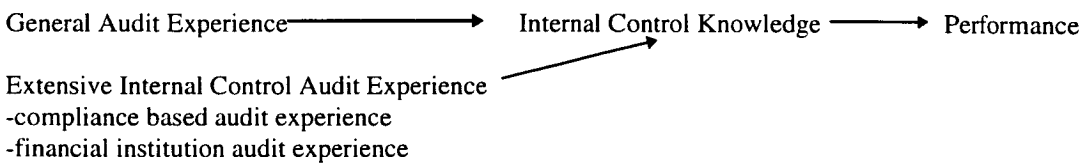
Auditors with financial institution experience are more exposed to internal control review, an outcome of the internal control reporting requirement and the reliance on the client's internal control structure. Auditors with financial institution experience perform more compliance testing to provide the basis for their report on internal control and thus, have a higher reliance on their clients' internal control structure or at least a more detailed knowledge of it. As such, financial institution experience is expected to reinforce and enhance internal control knowledge and performance.

The Libby and Tan (1994) internal control model suggested a general audit experience effect on knowledge and performance. This study extends the Libby and Tan (1994) model by incorporating the extensive internal control experience variables. The extensive internal control experience variables are operationalised by:

1. the relative audit time devoted to compliance based audit, and
2. the relative audit time exposure to financial institution audits.

Figure 4 illustrates the predicted direct effect of general and extensive audit experience on internal control knowledge and performance.

FIGURE 4 GENERAL AND EXTENSIVE EXPERIENCE - INTERNAL CONTROL KNOWLEDGE AND PERFORMANCE MODEL



Accuracy Measure

According to Tubbs (1992, p. 786), research in psychology has demonstrated that a person with more experience in a substantive area has more items stored in memory. Therefore, as auditing experience is gained, the number of errors known by the auditor is expected to increase. Weber and Crocker (1983) have also shown that increased experience results in a more accurate and more complicated category structure. Furthermore, according to Libby and Frederick (1990, p. 352), one of the most basic findings in memory research is that repetition of an item eases its subsequent retrieval and results in frequency learning. As such, accurate knowledge of a subject matter is predicted to be an important factor which allows the more experienced subject to outperform the inexperienced one.

In applying the above reasoning and findings to the case of internal control, increased extensive internal control experience in terms of compliance based audit experience or financial institution audit experience is expected to provide auditors with extensive opportunities to acquire internal control knowledge. Since auditors with extensive internal control audit experience are more exposed to internal control evaluations, they are expected to attain a higher level of accuracy in internal control knowledge. The level of accuracy in internal control knowledge of auditors with extensive internal control audit experience is expected to be higher than auditors without extensive

internal control audit experience and even higher than for students without any practical audit experience.

Therefore, the hypotheses can be stated in alternative form as:

$H_{1a\text{-}i}$: The level of accuracy in internal control knowledge of auditors with predominantly compliance based audit experience is higher than for auditors with predominantly substantive based audit experience.

$H_{1a\text{-}ii}$: The level of accuracy in internal control knowledge of auditors with predominantly compliance based audit experience is higher than for students with no practical audit experience.

$H_{1a\text{-}iii}$: The level of accuracy in internal control knowledge of auditors with predominantly substantive based audit experience is higher than for students with no practical audit experience.

$H_{1b\text{-}i}$: The level of accuracy in internal control knowledge of auditors with financial institution audit experience is higher than for auditors who have not audited financial institutions.

$H_{1b\text{-}ii}$: The level of accuracy in internal control knowledge of auditors with financial institution audit experience is higher than for students who have no practical audit experience.

$H_{1b\text{-}iii}$: The level of accuracy in internal control knowledge of auditors without financial institution audit experience is higher than for students who have no practical audit experience.

Consensus Measure

The effect of knowledge on the development of expertise has been addressed extensively by researchers in psychology who posited that knowledge is gained through instructions and experience. Research using subjects such as chess masters (Chase and Simon, 1973) and bridge players (Charness, 1979) has found that experts have more general domain knowledge than novices. Einhorn (1974) also noted that general domain knowledge is necessary for expert performance. It follows that internal control knowledge, a general domain knowledge as classified by Bonner and Lewis (1990), is a necessary determinant for expert performance in internal control evaluations.

Consensus has been frequently used as an indicator of decision accuracy in audit judgement research especially in audit tasks where there is no objective criterion against which to evaluate the judgements made (Trotman 1990, p. 40). Therefore, it is expected that high level of accuracy in internal control knowledge will lead to high level of consensus in internal control task performance. The hypothesis can be stated as:

H_{2a} : The level of consensus in the internal control tasks performed by subjects with high internal control knowledge is higher than for subjects with low internal control knowledge.

Hamilton and Wright (1982, p. 757) stated that:

> "... increasing situational experience and exposure to training programs over time should result in similar internal control evaluations, given essentially the same situations. For a judgement task where the same type of evaluation is

made repeatedly and the relationship between the cues and the criterion is basically the same over time, judgements should become increasingly stable..."

Furthermore, based on the Einhorn (1974) proposition that experts should show high inter-judge reliability, it is also expected that extensive internal control experience will lead to a high level of accuracy in internal control knowledge and eventually, to a high level of consensus in internal control task performance.

Consensus is expected to be derived from compliance based audit experience whereby there is reliance on the client's internal control structure. The level of consensus in the internal control task performed by auditors who predominantly rely on their clients' internal control structure (compliance based audit experience) is expected to be higher than the level of consensus in the internal control task performed by auditors who predominantly do not rely on their clients' internal control structure (substantive based audit experience) and students with no practical experience. The hypotheses can be stated as:

$H_{2b\text{-}i}$: The level of consensus in internal control tasks performed by auditors with predominantly compliance based audit experience is higher than the auditors with predominantly substantive based audit experience.

$H_{2b\text{-}ii}$: The level of consensus in internal control tasks performed by auditors with predominantly compliance based audit experience is higher than the students with no practical audit experience.

$H_{2b\text{-}iii}$: The level of consensus in internal control tasks performed by auditors with predominantly substantive based audit experience is higher than the students with no practical audit experience.

Consensus is also expected to be derived from common financial institution audit experience. The level of consensus in the internal control task performed by auditors with financial institution audit experience is expected to be higher than the level of consensus in internal control tasks performed by auditors without financial institution audit experience and students without any practical audit experience. The hypotheses can be stated as:

$H_{2c\text{-}i}$: The level of consensus in the internal control tasks performed by auditors with financial institution audit experience is higher than for auditors who have not audited financial institutions.

$H_{2c\text{-}ii}$: The level of consensus in the internal control task performed by auditors with financial institution experience is higher than for students who have no practical auditing experience.

$H_{2c\text{-}iii}$: The level of consensus in the internal control task performed by auditors without financial institution experience is higher than for students who have no practical auditing experience.

Self Insight

As outlined previously, greater accuracy implies greater consensus. Taking self insight as a proxy measure for performance, as with consensus, greater accuracy also

implies greater self-insight. Judgement or self insight relates to the degree of self insight into the relative weighting of internal control indicators of the internal control task within individual auditors (Hamilton and Wright 1982, p. 757).

It is considered important to have a high degree of self insight because auditors often have to explain and discuss their judgements with others (Bedard 1989, p. 119). Moreover, continued use of a judgement model over time could provide better understanding concerning the relative impact of information cues on one's overall judgements, so that levels of self insight should also improve with experience (Hamilton and Wright 1982, p. 757). It is expected that a high level of accuracy in internal control knowledge will lead to a high level of self insight in internal control task performance. The hypothesis can be stated as:

H_{3a} : The level of self insight exhibited by subjects with high internal control knowledge is higher than for subjects with low internal control knowledge.

According to Hamilton and Wright (1982, p. 757), continued use of a judgement model over time could provide better understanding concerning the relative impact of information cues on one's overall judgement, so that levels of self insight should also improve with experience. As such, auditors with extensive internal control experience are expected to have a higher level of self insight compared to auditors without extensive internal control experience and students without any practical experience.

Auditors whose audit clients have good internal control structures place higher reliance on their internal controls. As such, auditors who predominantly rely on their

clients' internal control structure (compliance based audit experience) are more exposed to internal control reviews and would attain a higher level of self-insight. On the other hand, auditors who do not rely on their clients' internal control structure (substantive based audit experience) are less exposed to internal control reviews and would attain a lower level of self-insight. The hypotheses are stated as follows:

$H_{3b\text{-}i}$: The level of self insight of auditors with predominantly compliance based audit experience is higher than for auditors with predominantly substantive based audit experience.

$H_{3b\text{-}ii}$: The level of self insight of auditors with predominantly compliance based audit experience is higher than for students with no practical audit experience.

$H_{3b\text{-}iii}$: The level of self insight of auditors with predominantly substantive based audit experience is higher than for students with no practical audit experience.

Another measure for extensive internal control audit experience is financial institution audit experience. Auditors with financial institution experience are more exposed to internal control evaluations and are expected to exhibit higher levels of consensus in their internal control evaluations compared to auditors without financial institution experience and students with no practical audit experience. The hypotheses can be stated as:

$H_{3c\text{-}i}$: The level of self insight exhibited by auditors with financial institutions audit experience is higher than for auditors who have not audited financial institutions.

$H_{3c\text{-}ii}$: The level of self insight exhibited by auditors with financial institution audit experience is higher than for students who have no practical auditing experience.

$H_{3c\text{-}iii}$: The level of self insight exhibited by auditors without financial institution audit experience is higher than for students who have no practical auditing experience.

SUMMARY

Auditors with extensive internal control experience are more frequently exposed to internal control reviews and thus, are expected to accumulate a more complete and accurate internal control knowledge. With a higher level of accuracy in internal control knowledge or extensive internal control experience, these auditors will attain a higher level of consensus and self insight in the internal control task. Based on the assumption of improved expertise as measured by consensus and self-insight, auditors with extensive internal control experience are expected to perform better in internal control evaluations. There are, in total, twenty hypotheses tested as listed below:

Extensive Internal Control Experience Effect on Knowledge Accuracy

$H_{1a\text{-}i}$	A_{Comp}	>	A_{Sub}
$H_{1a\text{-}ii}$	A_{Comp}	>	A_S
$H_{1a\text{-}iii}$	A_{Sub}	>	A_S
$H_{1b\text{-}i}$	A_{FI}	>	A_{NFI}
$H_{1b\text{-}ii}$	A_{FI}	>	A_S
$H_{1b\text{-}iii}$	A_{NFI}	>	A_S

Knowledge Effect on Consensus

H_{2a}	C_{HK}	>	C_{LK}

Extensive Internal Control Experience Effect on Consensus

$H_{2b\text{-}i}$	C_{Comp}	>	C_{Sub}
$H_{2b\text{-}ii}$	C_{Comp}	>	C_S
$H_{2b\text{-}iii}$	C_{Sub}	>	C_S
$H_{2c\text{-}i}$	C_{FI}	>	C_{NFI}
$H_{2c\text{-}ii}$	C_{FI}	>	C_S
$H_{2c\text{-}iii}$	C_{NFI}	>	C_S

Knowledge Effect on Self-Insight

H_{3a}	SI_{HK}	>	SI_{LK}

Extensive Internal Control Experience Effect on Self-Insight

$H_{3b\text{-}i}$	SI_{Comp}	>	SI_{Sub}
$H_{3b\text{-}ii}$	SI_{Comp}	>	SI_S
$H_{3b\text{-}iii}$	SI_{Sub}	>	SI_S
$H_{3c\text{-}i}$	SI_{FI}	>	SI_{NFI}
$H_{3c\text{-}ii}$	SI_{FI}	>	SI_S
$H_{3c\text{-}iii}$	SI_{NFI}	>	SI_S

where:

- A, C and SI denote the level of accuracy in internal control knowledge, level of consensus in internal control evaluations and level of self insight in internal control evaluations respectively.
- HK and LK represent the auditors in the high and low knowledge groups respectively.
- Comp and Sub represent auditors with predominantly compliance based audit experience and auditors with predominantly substantive based audit experience.
- FI, NFI and S represent auditors with financial institution audit experience, auditors without financial institution audit experience and students with no practical auditing experience respectively.

CHAPTER 5: METHODOLOGY

INTRODUCTION

The following chapter outlines the mail survey research method used to collect data to test the hypotheses developed in the previous chapter. This is followed by a discussion of the selection of subjects and the questionnaire utilised in this study. The strengths and limitations of the research methodology are also recognised.

METHOD

Responses to one internal control knowledge test and two internal control task are conducted *via* mail survey instruments responded to by:

1) auditors with predominantly compliance based audit experience/financial institution audit experience,
2) auditors with predominantly substantive based audit experience/non-financial institution experience, and
3) students without any practical audit experience.

There are several possible methods of administering the questionnaire, including:

1) personal interview
2) telephone interview
3) mail survey
4) experiment

Personal and telephone interviews are infeasible as the questionnaire requires the subjects to perform internal control evaluations that are difficult for respondents to deal with unless they can read the questions and alternative responses. Experimental research is an alternative but it is time consuming and uneconomical to gather the subjects, especially the practising auditors, for the purpose of completing the questionnaire.

The advantages of conducting a mail survey include geographic flexibility, reduced cost, respondent convenience and absence of interviewer bias. Compared to the other methods of conducting surveys, mail survey allows for access to more subjects in a wider geographical area. Mailing costs are lower than costs of telephone surveys or costs for travel to conduct experiments. The use of standard questions means that the questionnaires can be filled out at a time more convenient to the respondent. This increases both the rate and accuracy of responses, and reduces interviewer bias. However, there is little control over the return of the questionnaire and the speed of the response.

Nevertheless, measures were implemented to ensure the majority of the subjects returned the questionnaires on a timely basis, to ensure a spread of subjects across the three groups and to facilitate prompt responses. These measures include the assistance of a contact person at the firm and the university participating in the questionnaire. The contact person is also provided with an instruction sheet in relation to the selection of subjects and the distribution of the questionnaire.

The criteria for the selection of the subjects was communicated to the contact person in writing. The selection is a stratified random selection requiring half the auditor subjects to have experience in auditing financial institutions. Given that the only constraint on the distribution is the financial institution experience criterion and subjects thereafter are randomly selected within the financial institution experience strata, the subjects should be representative of the various positions and levels of experience.

The survey distribution approach undertaken is similar to that in Hamilton and Wright (1982). Two contact persons, one from the participating firm (either a partner, audit manager or training manager) and one from the university (lecturer-in-charge), were approached to establish the initial contact. Arrangements were made for the subsequent distribution of the questionnaires to the contact person and eventually, to the subjects. Written instructions were provided in relation to the selection of samples, distribution, collection and return of the questionnaires. Each aspect of this administration is described in greater detail later in the chapter.

The contact person from the accounting firm provided the auditor subjects with a signed cover letter on the audit firm's stationery expressing the firm's support for this study and requesting that the subjects return the completed materials within two weeks. Where possible, for the practising subjects, an appropriate account number was included in the cover letter indicating the account for charging time spent completing the materials. All subjects were assured that they were not being evaluated based on their responses, and were requested to work independently. Anonymity of the responses is maintained by having the materials returned in unmarked and sealed

envelopes to the contact person. These envelopes were then collected by the contact person and forwarded to the researcher for analysis. Anonymity of the responses did not allow the identification of subjects who have not returned the questionnaires. However, follow up actions were undertaken by the contact person in the accounting firm with copies of the questionnaires attached to email messages. The email messages were sent a month after the first distribution of the questionnaire to all of the selected subjects instructing those who have not responded to return the completed questionnaire within the week. As the response rate was 100% for the students subjects, no follow up actions were required.

SUBJECTS

Sample sizes from prior research range from thirty one (Ashton and Brown, 1980) to as many as four hundred and fifty three (Ashton, 1991).[32] Auditor subjects for this study are drawn from one Big Six accounting firm in Australia. The Big Six accounting firms audit a number of financial institutions which allows a substantial number of their employee to specialise in the audit of financial institutions. It is expected that the Big Six accounting firms contain most of the personnel classified as specific financial institution audit specialists with substantial experience levels. The Melbourne and Sydney offices of one Big Six accounting firm were approached. The

[32] The number of subjects used are as follows: 63 auditors and 96 students in Abdolmohammadi and Wright (1987), 63 auditors in Ashton (1974), 30 students and 63 auditors in Ashton and Kramer (1980), 31 auditors in Ashton and Brown (1980), 453 auditors from 1 firm in Ashton (1991), 112 tax staff from various firms in Bonner, Davis and Jackson (1992), 35 auditors in Frederick (1991), 35 auditors in Gaumnitz et al, 1982), 87 auditors from 1 firm in Hackenbrack (1993), 31 students and 78 auditors in Hamilton and Wright (1982), 41 auditors from 1 firm in Jeffrey (1992), 191 auditors and students in Libby and Frederick (1990), 38 auditors from 5 firms in Mayper (1982), 85 auditors from 1 firm in Moeckel (1990), 85 auditors from 1 firm in Moeckel and Plumlee (1989), 243 auditors from 4 firms in Pratt and Stice (1994) and 72 auditors from 5 different firms in Tubbs (1992).

questionnaire was distributed to practising auditors. The final sample included fifty eight auditor subjects, a response rate of 28.5%.

Student subjects for this study are drawn from an Australian university. The lecturer-in-charge of the unit acted as the conduit of information. The final sample included eighty student subjects who were present at an Auditing lecture. These students had completed two weeks of specific studies of internal control evaluation and ten weeks of auditing in general (including aspects of internal control evaluation).

DATA COLLECTION

The instrument utilised for data collection has four sections which include the knowledge accuracy task, the consensus task, the self insight task and demographics details.

Task 1 - Accuracy Measure

The first section of the instrument provides eight errors/irregularities in a sales and receivables cycle of a manufacturing firm as devised by Tubbs (1992).[33] The subjects are required to identify the internal control objective violated in relation to each of the eight errors/irregularities.

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[33] Tubbs (1992) required subjects to complete two tasks. The first task was an unconstrained free recall task whereby subjects were allowed fifteen minutes to list, in order of recall, as many different errors as possible that might occur in the sales-receivables-cash receipts cycle of a typical wholesaling or manufacturing company. In the second task, the subjects were provided with a list of eight errors in the sales, receivables and cash receipts cycle of a wholesaling or manufacturing firm. They were required to decide on the probability of each of those errors occurring. For the purpose of analysing the data, Tubbs (1992) drew up a comprehensive list of forty four errors that could occur in the sales-receivables-cash-receipts cycle of a wholesaling or manufacturing firm by reviewing various auditing textbooks and audit manuals of five Big Eight firms. In the instrument utilised in this study, instead of requiring subjects to identify the probability of each of the errors occurring, the subjects were required to identify the internal control objectives violated for each error.

According to Tubbs (1992, p. 792), these errors/irregularities are classified according to the internal control objective violated. The eight items are selected for inclusion in the questionnaire based on the criterion that each of the eight errors violates only one of the following four control objectives:

1) validity

2) authorisation

3) completeness

4) valuation

In this study, the subjects are provided with a list of eight errors/irregularities in the sales and receivables cycle of a wholesaling or manufacturing firm.[34] The subjects are required to identify the internal control objectives violated for each of the eight errors. The responses of the subjects are checked against a model answer for accuracy. This model answer provided by Tubbs (1992, p. 792) has been further supported by materials from the auditing text book, Arens A. A., Loebbecke J. K. And Shailer G. E. P., *Auditing in Australia : An Integrated Approach* (Prentice Hall, 1990) and is reported in Appendix 1.

Task 2 - Consensus Measure

The second section requires the subjects to evaluate the internal control structure of sixteen different variations of a payroll control situation independently. Each situation, hereafter referred to as a case, contains a list of five control statements or

[34] Refer to Appendix 2, Part one.

cues which have been pre-answered "yes" or "no".[35] For each case, subjects are required to rate the strength of the internal control structure ranging from 1, extremely weak, to 7, strong. This section of the instrument is based on the methodology employed in Ashton (1974).

According to Ashton (1974, p. 147), the payroll subsystem is appropriate for three reasons. First, the review of the payroll subsystem is important because it is a common component in the financial system of all companies. Second, the characteristics of an adequate payroll internal control should be familiar to all auditors. This method of identifying differences in internal control knowledge between different groups of auditors has been used in various studies such as Ashton and Brown (1980), Ashton and Kramer (1980), Hamilton and Wright (1982) and Trotman et al (1983). Third, the concept of internal control is generic and can be easily applied to all accounting cycles. It is expected that the results will be comparable to tasks involving internal control evaluations for other accounting cycles.

The instrument developed by Ashton (1974) has been widely used by other researchers (Ashton and Brown, 1980; Ashton and Kramer, 1980; and Hamilton and Wright, 1982). The instrument consisted of thirty two cases based on six indicators of payroll internal control. The indicators read as follows:

1. Are the tasks of both timekeeping and payment of employees adequately separated from the payroll preparation?
2. Are the tasks of both payroll preparation and payment of employee adequately

[35] Refer to Appendix 2, Part two.

separated from the task of payroll bank account reconciliation?

3. Are the names on the payroll checked periodically against the active employee file of the personnel department?
4. Are formal procedures established for changing names on the payroll, pay rates and deductions?
5. Is the payroll audited by internal auditors?
6. Was the internal control over payroll found to be satisfactory during the previous audit?

The instrument used in Ashton (1974) is not utilised in its original form in this study. Ashton's instrument was developed in the 1970s and does not address the practical implications of the 1990s. Furthermore, the questions are based upon characteristics of sound internal control discussed in Statements on Auditing Procedures, no. 33. It is necessary to modify the questions which are based on the US auditing context to suit an Australian context since the questionnaire is distributed in Australia.

In Ashton (1974), the first four indicators address the issues of separation of duties, independent reconciliation, internal verification and authorisation; the fifth is concerned with the work of internal auditors and the sixth is concerned with the results of previous audits. It is necessary to modify the indicators to address all aspects of the internal control functions and the key internal controls in a balanced and structured manner, an objective which is not achieved in Aston (1974). The limitations of the instrument are discussed in later parts of this chapter, in conjunction with the comparison between the questions used in Ashton (1974) and in the current study. The evaluation task in Ashton (1974) is adopted in the present study but the

case studies are modified to address each individual payroll function and key internal control listed below.

The payroll functions are classified into:

1) personnel and employment

2) timekeeping and payroll preparation

3) payment of payroll

4) preparation of fringe benefits tax, income tax and other items.[36]

The key internal controls are:

1) separation of duties

2) authorisation

3) presence of independent reconciliation

4) internal verification of calculation

5) internal verification of account classification.[37]

The final five indicators are based on the matrix shown in **Table 2** whereby each indicator addresses two payroll functions and one internal control. For example, question 1 addresses the internal control, authorisation and two payroll functions personnel and employment, and timekeeping and payroll preparation.

The five questions that are utilised in the questionnaire are listed in **Table 3**. Questions 1 and 2 are similar to questions 4 and 1 in Ashton (1974) respectively.

[36] Arens, Loebbecke, Best and Shailer (1990, p. 560).
[37] ibid, p. 566.

Question 2 in Ashton (1974) addressed the issue of separation of duties between payment and bank reconciliation which has already been addressed in question 1 of that questionnaire. The current questionnaire required the presence of the bank reconciliation procedure in Question 4 instead. In the presence of modern computerised technology, Question 3 in Ashton (1974), "Are the names on the payroll checked periodically against the active employee file of the personnel department?", is redundant as the more likely procedure in place would be to check that employees who have resigned are deleted from the payroll list. Questions 5 and 6 in Ashton (1974) have been replaced by Questions 3 and 5 in the current questionnaire, addressing the issue of internal verification which was not dealt with completely in Ashton (1974). This is a key control required in accounting cycles.

The five questions used in this study's questionnaire have been designed to comprehensively cover the major controls expected in payroll systems and require responses to a total of sixteen (2^5 of which half the combination are selected for testing based on factorial replication[38]) combinations of the five questions. For each of the cases, each subject is required to assign an internal control evaluation based on a 7-point scale as follows:

1, extremely weak
2, very weak
3, substantial weakness
4, some weakness
5, marginally adequate
6, adequate
7, strong

[38] Cochran and Cox (1957, pp. 244-249).

TABLE 2 CASE STUDY QUESTIONS EACH ADDRESSING TWO PAYROLL FUNCTIONS AND ONE KEY INTERNAL CONTROLS

	Payroll Functions			
Listed Below are the Key Internal Controls:	**Personnel & Employment**	**Timekeeping & Payroll Preparation**	**Payment of Payroll**	**Preparation of Payroll, Fringe Benefits and Other Items**
Authorisation	Q1	Q1		
Separation of Duties		Q2	Q2	
Internal Verification of Calculation			Q3	Q3
Independent Reconciliation		Q4	Q4	
Internal Verification of Accounting Classification		Q5		Q5

Q denotes question number

TABLE 3 THE QUESTIONS USED IN THE INSTRUMENT WHICH WAS DISTRIBUTED TO AUDITOR AND STUDENT SUBJECTS

1. Are formal procedures established for the authorisation of payroll, pay rates and actual working hours (if applicable)?
2. Are the task of authorisation and payment in the payroll cycle adequately separated?
3. Are formal procedures established for internal verification of gross pay amounts and deduction?
4. Are formal procedures established for independent reconciliation of amount stated in payroll preparation and actual amount paid?
5. Are formal procedures established for internal verification of accounting classification?

Consensus is measured as the average pairwise comparisons within each group of interest and then these averages are compared across the relevant groups.

Task 3 - Self Insight Measure

The third section requires subjects to allocate 100 points across the five listed internal control cues posed in the second part of the instrument adopted from Ashton (1974). The points related to the perceived level of importance of each control. The allocation provided here, subjective cue utilization, is used for determining the level of insight relative to the internal control evaluations made in each of the case studies for the second section, objective cue utilisation.

Demographics

The last section collects demographic information about the subjects for data analysis purposes. The information provided here allows the determination of the experience effect, as operationalised by industry, type of audit experience and number of years of audit experience on the internal control judgement.

SUMMARY

Data are collected using the mail survey method. The questionnaire was distributed and collected with the assistance of a contact person at the firm and at the university participating in the questionnaire. The questionnaire is based on the instrument used by Ashton (1974) and Tubbs (1992). It is illustrated in Appendix 2. The final sample

comprised fifty eight auditor subjects and eighty student subjects from one accounting firm and one university respectively.

CHAPTER 6 : DATA ANALYSIS AND RESULTS

INTRODUCTION

The following chapter provides the descriptive statistics for the subjects who participated in the questionnaire. The data collected from the subjects are then analysed to test the hypotheses and finally, the results are summarised.

The F test is used to analyse the data for the hypotheses in relation to the level of accuracy of internal control knowledge. The level of consensus between subject groups is determined using the Spearman Correlation. The level of self insight within subject groups is determined using a judgement research technique developed by Hoffman et al (1968) and used by Ashton (1974). First, a descriptive ANOVA is constructed for each subject. The omega squared, ω^2, for each cue is obtained from the ANOVA for each subject. The ω^2 indicates the level of reliance that the subject places on each cue when making the internal control judgements. There are five cues in each case and thus, there are five ω^2. The five ω^2 are correlated with the point allocation provided by that subject in Part Three of the questionnaire to obtain the self insight index. This procedure is repeated for all subjects to obtain a self insight index for each subject. The mean self insight indices for each subject group, for example financial institution auditors *versus* non-financial institution auditors, are then compared to determine the level of significant differences between the self insight indices of the two groups.

The results support twelve of the twenty hypotheses. There is no knowledge effect for the level of consensus or the level of self insight. In relation to auditors with predominantly compliance based audit experience, results indicate that these subjects possess a higher level of consensus compared to auditors with predominantly substantive audit experience but neither a higher level of self insight nor a more accurate internal control knowledge. There is no financial institution experience effect for the level of accuracy, level of consensus or the level of self insight. The results are highly supportive of the hypotheses involving students. All the hypotheses involving students, except the consensus hypothesis in relation to auditors with predominantly substantive based audit experience *versus* students, were supported. This indicates highly significant differences between students and auditors for the level of accuracy in knowledge, level of consensus and level of self insight.

PILOT TESTING

A preliminary version of the questionnaire was pilot tested before the final distribution to the student and auditor subjects. The subjects who participated in the pilot test comprised twelve auditors from local accounting firms in Tasmania and ten students from a university in Australia. Of the twelve auditor subjects, there were eight partners and four managers. Minor changes were made to the first version to produce a second version of the questionnaire. The second version of the questionnaire incorporated the comments of the subjects and was reviewed by a partner of a local accounting firm in Tasmania. The subjects acknowledged that the questionnaire was in an understandable form to the auditors and the tasks were in line with the audit procedures carried out in an audit assignment.

DESCRIPTIVE STATISTICS

The final subject group comprises 58 auditors from one Big Six accounting firm with offices in Melbourne and Sydney; and 80 students who are completing the third year Auditing unit at an Australian university. The response rate from the auditors is 28.5%, with 58 usable responses from the 200 questionnaires distributed. 49 responses were obtained initially and a follow up resulted in another 9 responses.[39] The response rate from the students is 100%, 80 responses, as the questionnaire was administered during the auditing lecture. The means are computed for the following variables:

1. financial institution experience (FIEXP) ($\bar{x}$ = 10.43 months),
2. number of financial institutions audited (FI#) ($\bar{x}$ = 3.40 financial institutions audited),
3. total experience (TTLEXP) ($\bar{x}$ = 36.76 months); and
4. score for Part One of the questionnaire (TEST) ($\bar{x}$ = 4.03 correct answers out of a maximum of 8).

This is shown in Table 4, Panel A, along with details of the range and standard deviation for each measure.

[39] The difference between the number of responses received and the number of subjects for each relevant variable in Table 4 is due to the missing information not provided by the subjects. The discrepancy does not affect the results as discussed in Chapter 7, Limitations, p. 103.

TABLE 4 DESCRIPTIVE DATA - INDEPENDENT AND DEPENDENT VARIABLES

PANEL A : FOR ALL SUBJECTS

Variable	No.	Mean	Std Dev	Minimum	Maximum
Independent Variables:					
FIEXP (Mths)	134	10.43	28.27	0	154
FI#	134	3.40	18.22	0	200
TTLEXP (Mths)	136	36.76	61.90	0	420
Independent/Dependent Variable*:					
TEST	138	4.03	1.48	0	8

PANEL B : FOR AUDITOR SUBJECTS ONLY

Variable	No.	Mean	Std Dev	Minimum	Maximum
Independent Variables:					
FIEXP (Mths)	54	25.89	39.97	0	154
FI#	54	8.43	28.10	0	200
TTLEXP (Mths)	56	89.27	68.07	3	420
Independent/Dependent Variable*:					
TEST	56	4.87	1.42	1	8

FIEXP (Mths) - Number of months of financial institution experience
FI# - Number of financial institutions audited
TTLEXP (Mths) - Total number of months of audit experience
TEST - Test score obtained based on the number of correct responses in relation to the internal control objective violated for each of the eight missing internal control (Part One of the questionnaire)

*The test score is a dependent variable when investigating the level of knowledge accuracy of different subject groups but an independent variable when investigating whether there is a knowledge effect on the level of consensus and on the level of self insight.

4) subject type (Type), whether financial institution auditor (n = 24), non-financial institution auditor (n = 32), student with no practical audit experience (n = 80) and missing data (n = 2).

The experience levels for the subjects of prior studies investigating expertise in the internal control task ranged from:

1) 2 to 3 years of experience for the 63 auditor subjects in Ashton (1974) and Ashton and Kramer (1980),
2) 1 to 3 years of experience for the 31 subjects in Ashton and Brown (1980); and
3) 0 to 28 years of experience for the 78 auditors in Hamilton and Wright (1982).

The current sample of 58 auditor subjects is within the scope of the sample size in prior studies which ranged from 31 to 78,. The subjects in the current sample are more experienced with a mean number of years of experience at approximately 7 years compared to the three studies mentioned above. Most of the auditor subjects are at the manager level (n = 30) while the remaining 22 are at the supervisory level or below and 2 at director level. Therefore, the majority of the auditor subjects are relatively experienced in the field of audit with 38 auditor subjects, out of a total of 58, having more than five years of audit experience. The current student subject group of 80 was relatively large compared to the student subject groups in the prior studies, which is approximately 30.

The computed means for auditor subjects only, as presented in Table 4, Panel B, are:

1. financial institution experience (FIEXP) ($\bar{x}$ = 25.89 months),
2. number of financial institutions audited (FI#) ($\bar{x}$ = 8.43 financial institutions audited),
3. total experience (TTLEXP) ($\bar{x}$ = 89.27 months); and
4. score for Part One of the questionnaire (TEST) ($\bar{x}$ = 4.87 correct answers out of a maximum of 8).

Generally, the distributions of the frequencies for the variables are skewed to the right for both analysis in Table 4, Panel A and B. The level of the peak is higher for the FI# frequency (s = 29.753, Kurtosis = 100.339) compared to the rest of the variables, FIEXP (s = 36.753, Kurtosis = 11.616) and TTLEXP (s = 70.999, Kurtosis = 12.694).

Table 5 provides a frequency table for the following:

1) positions held at the firm (Post); assistant (n = 4), senior (n = 8), supervisor (n = 10), manager (n = 30), director (n = 2), students (n = 80) and missing data (n = 4);
2) levels of total audit experience (TTLEXP) as to whether it is low (0-4 years of experience) where n = 18, medium (5 -7 years of experience) where n = 19, high (more than 8 years of experience) where n = 19, students (n = 80) and missing data (n = 2);
3) compliance/substantive based audit experience (COMPEXP), auditors with predominantly compliance based experience (n = 19), auditors with predominantly substantive based experience (n = 36), students with no practical audit experience (n = 80) and missing data (n = 3); and

TABLE 5 DESCRIPTIVE DATA - FREQUENCIES OF DEPENDENT AND INDEPENDENT VARIABLES

CLASSIFICATION	Frequency
Independent Variables:	
POST	
- Assistant	4
- Senior	8
- Supervisor	10
- Manager	30
- Director	2
- Student	80
- Missing Data	4
	138
TTLEXP	
- Low (0 to 4 years of experience)	18
- Medium (5 to 7 years of experience)	19
- High (more than 8 years of experience)	19
- Students	80
- Missing Data	2
	138
COMPEXP	
- predominantly compliance based	19
- predominantly substantive based	36
- students	80
- Missing Data	3
	138
TYPE	
- Financial institution auditor (FI)	24
- Non-Financial institution auditor (NFI)	32
- Students	80
- Missing Data	2
	138
Independent/Dependent Variable*:	
TEST	
- > 4 correct answers	51
- 4 or less correct answers	87
	138

POST - Position held at audit firm
TTLEXP - Total number of years of audit experience
TYPE - Financial institution auditor or non financial institution auditor or student
COMEXP - Compliance based audit experience or substantive based audit experience or no practical audit experience
TEST - Test score obtained based on the number of correct responses in relation to the internal control objective violated for each of the eight missing internal control (part one of the questionnaire)

*The test score is a dependent variable when investigating the level of knowledge accuracy of different subject groups but an independent variable when investigating knowledge effect on the level of consensus and self insight.

With reference to extensive internal control audit experience, 19 are auditors with predominantly compliance audit experience and 36 are auditors with predominantly substantive audit experience, while 24 of the current auditor subjects are financial institution auditors and 32 are non-financial institution auditors. A chi squared analysis was performed to determine the level of independence between the two variables, compliance audit experience and financial institution experience (see Table 6). The results indicate that these two variables are not independent of each other ($\chi^2 = 7.25$, $p = 0.007$). As such, financial institution experience is a reasonable proxy for compliance based audit experience.

When the subjects are classified according to total audit experience and financial institution experience, the distribution is fairly even with approximately the same number of financial and non-financial institution auditors in each category of audit experience. The distribution is as follows:

1. 7 and 10 financial and non-financial institution auditors respectively for the low experience group,
2. 9 and 10 financial and non-financial institution auditors respectively for the medium experience group; and
3. 8 and 12 financial and non-financial institution auditors respectively for the high experience group.

The test scores from Part One of the questionnaire were slightly skewed with 51 subjects obtaining more than four correct answers and 87 with less than four correct answers.

TABLE 6 CONTINGENCY TABLE FOR EXTENSIVE AUDIT EXPERIENCE VARIABLES

	FI auditor	**NFI auditor**	**Total**
Compliance Audit Exp	13 (6.1)	6 (8.9)	19
Substantive Audit Exp	11 (13.9)	25 (20.1)	36
Total	24	31	55

$\chi^2 = 7.25$, $p = 0.007$

FI = Financial institution
NFI = Non-financial institution
Exp = Experience
( ) = Figures in brackets are the expected frequency values

LEVEL OF ACCURACY OF INTERNAL CONTROL KNOWLEDGE

The first part of the questionnaire requires subjects to identify the internal control objective violated in relation to the absence of each of eight internal controls. The subjects' responses to the first part of the questionnaire are checked against the model answer in Appendix One to determine the number of correct answers obtained by each subject and a test score is awarded to each subject. For every correct answer obtained, one mark is awarded. The minimum and maximum test scores that a subject can potentially obtain are 0 and 8 respectively.

To test whether specific compliance based audit experience resulted in knowledge differences, H_{1a}, the subjects are classified into the following groups:

1) auditors with predominantly compliance based audit experience,
2) auditors with predominantly substantive based audit experience; and
3) students with no practical audit experience.

Table 7 reports the mean test score for Part One of the questionnaire for each of the groups. It also reports the results of the comparisons of the mean test scores between the groups.

TABLE 7 LEVEL OF ACCURACY (MEASURED USING MEAN SCORE OF TEST IN PART ONE OF THE QUESTIONNAIRE)

Hypotheses	Groups	Mean	Std Dev
H_1 : Extensive audit experience effect on the level of accuracy of knowledge			
$H_{1a\text{-}i}$	**Auditors with predominantly compliance based audit experience (n=19)**	4.95	1.43
	Auditors with predominantly substantive based audit experience (n=36)	4.86	1.44
	F = 0.0449		
	1-tailed p = 0.417		
$H_{1a\text{-}ii}$	**Auditors with predominantly compliance based audit experience (n=19)**	4.95	1.43
	Students (n=80)	3.46	1.25
	F = 20.4162		
	1-tailed p = 0.000		
$H_{1a\text{-}iii}$	**Auditors with predominantly substantive based audit experience (n=36)**	4.86	1.44
	Students (n=80)	3.46	1.25
	F = 18.8519		
	1-tailed p = 0.000		
$H_{1b\text{-}i}$	**Auditors with FI Experience (n=24)**	5.00	1.38
	Auditors without FI Experience (n=32)	4.78	1.45
	F = 0.3237		
	1-tailed p = 0.286		
$H_{1b\text{-}ii}$	**Auditors with FI Experience (n=24)**	5.00	1.38
	Students (n=80)	3.46	1.25
	F = 26.5143		
	1-tailed p = 0.000		
$H_{1b\text{-}iii}$	**Auditors without FI Experience (n=32)**	4.78	1.45
	Students (n=80)	3.46	1.25
	F = 18.9162		
	1-tailed p = 0.000		
Additional Tests:			
	Auditors with predominantly compliance based audit experience (n=19)	4.95	1.43
	Auditors with predominantly substantive based audit experience (n=36)	4.86	1.44
	Students (n=80)	3.46	1.25
	KW = 29.5231		
	p = 0.000		
	Auditors with FI Experience (n=24)	5.00	1.38
	Auditors without FI Experience (n=32)	4.78	1.45
	Students (n=80)	3.46	1.25
	KW = 29.4444		
	p = 0.000		
	Number of Years of FI Experience (auditor subjects) (n=56)	7.33	5.41
	t = -0.905		
	1-tailed p = 0.185		
	No. of Financial Institutions Audited (auditor subjects) (n=56)	8.45	28.10
	t = -1.525		
	1-tailed p = 0.067		

The analysis of variance F test is used to compare the means of each pair of categories as a directional hypothesis is being considered.[40] The F test is appropriate for variance hypotheses if the population distribution is normal or the sample sizes are quite large.[41] The samples are also assumed to have been randomly selected from the population in an independent manner. The population is assumed to be normally distributed, with equal variances and means. However, moderate departures from these assumptions will not seriously affect the properties of the test. This is particularly true of the normality assumption.[42]

For $H_{1a\text{-}i}$, the results are in line with the predicted relationship but the difference is not significant, thus indicating no experience effect, measured in terms of compliance and substantive based audit experience, on the level of accuracy of knowledge. As such, there is no support for $H_{1a\text{-}i}$ (F = 0.0449, 1-tailed p = 0.417). However, the results support the comparison between auditor and student subjects. The difference in the test scores between auditors with predominantly compliance based audit experience ($\bar{x}$ = 4.95) and students ($\bar{x}$ = 3.46) are significant at the five percent level, thus supporting $H_{1a\text{-}ii}$ (F = 20.4162, 1-tailed p = 0.000). Similarly, the results also indicate significant differences between the test scores for the auditors with predominantly substantive based audit experience ($\bar{x}$ = 4.86) and students ($\bar{x}$ = 3.46), thus supporting $H_{1a\text{-}iii}$ (F statistics = 18.8519, 1-tailed p = 0.000). The Kruskal-Wallis test, which provided a comparison of more than two population distributions, also

[40] Hays (1963, p. 375). An analysis using the t test revealed the same conclusion as that obtained for the F test.
[41] ibid, p. 352.
[42] Mendenhall et al (1986, p. 422).

indicated that the three groups, auditors with predominantly compliance based audit experience, auditors with predominantly substantive based audit experience and students, had significantly different test scores (KW = 29.5231, p = 0.000).[43] Clearly, the result is driven by the student group's poor performance.

To test whether there are knowledge differences between subject groups with and without financial institution experience, H_{1b}, the subjects are classified into the following groups:

1) auditors with financial institution audit experience,
2) auditors without financial institution audit experience; and
3) students without any practical experience.

The computed mean test scores from Part One of the questionnaire for the financial institution auditors, non-financial institution auditors and students are 5.00, 4.78 and 3.46 respectively. Although there is a slight difference between the mean score of the two types of auditors, the difference is not significant (F = 0.3237, 1-tailed p = 0.286). As such, in relation to $H_{1b\text{-}i}$, the results indicated that there is no financial institution experience effect on the level of accuracy of knowledge.

The mean test score for the financial institution auditors is significantly higher than the mean test score for the students at the 0.05 level (F = 26.5143, p = 0.000) and is consistent with $H_{1b\text{-}ii}$. The mean test score for non-financial institution auditors is

[43] Mendahall et al (1986, p. 800). The Kruskal-Wallis test is a one way analysis of variance procedure based on ranked data and is the nonparametric counterpart to the completely randomized design. It is used when the sample observations do not satisfy the requirements of the F-test, like those involving ordinal data or when the probability distribution of observation is distinctly non-normal in appearance.

also significantly higher than the mean score for the students at the 0.05 level which supports $H_{1b\text{-}iii}$ ($F = 18.9162$, 1-tailed $p = 0.000$).

The Kruskal-Wallis test indicates that the mean test scores for the three groups, financial institution auditors, non-financial institution auditors and students, are significantly different at the five percent level of significance ($KW = 29.4444$, $p = 0.000$). Clearly, this is again driven by differences between the students' internal control evaluation accuracy and the auditors' accuracy rather than financial institution audit experience.

Further tests were conducted based on the following models:

test score = $\alpha + \beta(FIEXP) + \varepsilon$

test score = $\alpha + \beta(FI\#) + \varepsilon$

The results indicated no financial institution experience effect of the level of knowledge accuracy ($t = -0.905$, $p = 0.185$). The results also revealed that the number of financial institution audits conducted has no significant effect on the level of knowledge accuracy ($t = -1.525$, $p = 0.067$).

LEVEL OF CONSENSUS BETWEEN SUBJECT GROUPS

The level of consensus between subject groups relates to the level of agreement among subjects for the internal control evaluations provided by the subjects for the sixteen cases in Part Two of the questionnaire.

To measure the level of consensus, a correlation analysis is performed. The subjects are first separated into the respective analysis groups (high/low knowledge groups, compliance/substantive based audit experience groups or financial institution/non-financial institution groups). Each subject's evaluations for the cases in Part Two of the questionnaire are correlated with the evaluations of each remaining subject in the group, using the Spearman Correlation. The Spearman Correlation is a measure of association between two variables which requires both variables be measured in at least an ordinal scale so that the objects or individuals under study may be ranked in two ordered series.[44] In this study, the internal control evaluations for the 16 cases of each subject can be ranked. The rankings of the cases for each subject can then be correlated with the rankings of each of the remaining 137 subjects to obtain the Spearman correlation coefficients. There are 137 Spearman correlation coefficients for each subject. A mean consensus is obtained for each subject and also for each subject group. The Mann-Whitney test is used to test whether the two independent groups were drawn from the same population. This test may be used when at least ordinal measurement has been achieved for the variables being studied. The mean consensus for each subject can be ranked and this test identifies any differences between the consensus levels of the two subject groups. A higher coefficient indicates a higher level of consensus within the respective group. Table 8 documents the mean correlation coefficients, the U values and the probability levels for each group.

[44] Siegel and Castellan (1988, p. 235).

TABLE 8 LEVEL OF CONSENSUS FOR EACH SUBJECT GROUP CLASSIFIED ACCORDING TO THE HYPOTHESES

Hypotheses	Groups	*mean correlation*	Standard Deviation	U	1-tailed *p*
H_{2a} : Knowledge effect on level of consensus					
H_{2a}	- subjects with more than four correct answers (n = 51)	0.66	0.16		
	- subjects with four or less correct answers (n = 87)	0.61	0.22	1983	0.133
H_{2b} : Compliance audit experience effect on level of consensus					
$H_{2b\text{-}i}$	- Auditors with predominantly compliance experience (n = 19)	0.68	0.17		
	- Auditors with predominantly substantive experience (n = 36)	0.67	0.10	229	0.023
$H_{2b\text{-}ii}$	- Auditors with predominantly compliance experience (n = 19)	0.68	0.17		
	- Students (n = 80)	0.61	0.23	448.5	0.003
$H_{2b\text{-}iii}$	- Auditors with predominantly substantive experience (n = 36)	0.67	0.10		
	- Students (n = 80)	0.61	0.23	1288.5	0.183
H_{2c} : Financial institution audit experience effect on level of consensus					
$H_{2c\text{-}i}$	- FI auditors (n = 24)	0.65	0.18		
	- NFI auditors (n = 32)	0.69	0.05	360	0.346
$H_{2c\text{-}ii}$	- FI auditors (n = 24)	0.65	0.18		
	- Students (n = 80)	0.61	0.23	739	0.044
$H_{2c\text{-}iii}$	- NFI auditors (n = 32)	0.69	0.05		
	- Students (n = 80)	0.61	0.23	1019	0.046

To test whether there is a greater level of consensus amongst subjects with accurate internal control knowledge and those with less accurate internal control knowledge, H_{2a}, the subjects are classified into the following groups:

1) subjects with more than four correct answers in Part One of the questionnaire, and
2) subjects with four or less correct answers in Part One of the questionnaire.

The mean Spearman Correlation Coefficient for the high internal control knowledge group and low internal control knowledge group are 0.66 and 0.61 respectively. The difference is not significant at the 0.05 level indicating no knowledge effect on the level of consensus and thus, H_{2a} is not supported ($U = 1983$, $p = 0.133$).

To test whether compliance audit experience, regardless of industry, brings about a higher level of consensus, H_{2b}, the statistical steps performed for H_{2a} are repeated to obtain a mean Spearman Correlation Coefficient for each of the following groups:

1) auditors with predominantly compliance based audit experience,
2) auditors with predominantly substantive based audit experience; and
3) students with no practical audit experience.

The coefficients are 0.68, 0.67 and 0.61 for the auditors with predominantly compliance based audit experience, the auditors with predominantly substantive based audit experience and students with no practical audit experience respectively. The difference is significant at the five percent level between the level of consensus for:

1) auditors with predominantly compliance based audit experience and auditors with predominantly substantive based audit experience ($U = 229$, 1-tailed $p = 0.023$); and

2) auditors with predominantly compliance based audit experience and students with no practical audit experience (U = 448.5, 1-tailed $p = 0.003$).

The difference is not significant for level of consensus of the auditors with predominantly substantive based audit experience and the students with no practical audit experience (U = 1288.5, 1-tailed $p = 0.183$). The results support $H_{2b\text{-}i}$ and $H_{2b\text{-}ii}$ but not $H_{2b\text{-}iii}$. This indicates a extensive audit experience effect on the level of consensus of the subjects. As such, compliance based audit experience is associated with better performance of the auditors as indicated by the level of consensus.

In relation to $H_{2c\text{-}i}$, the consensus levels are not in the predicted direction for the auditors with financial institution experience (0.65) and without financial institution experience (0.69). A possible reason for a reverse relationship in the level of consensus is the specialised nature of the industry. The transactions of the financial institution are specific to this industry and are extremely complex. In auditing this industry, auditors would acquire specific knowledge of the financial instruments and may be unable to relegate from a specific level of knowledge to a general level. In relation to internal control, the auditors of financial institutions have more exposure to compliance testing but the specific nature of the compliance testing does not necessarily allow these auditors to apply the acquired "specific" internal control knowledge to a general internal control context, such as in a payroll cycle or revenue cycle.[45]

[45] Russell S., *Derivative Failures and Internal Controls : What Lessons Can Auditors Learn?*, Auditors & Liquidators Trust Fund Lecture, 10 October 1996.

Nevertheless, the levels of consensus for both financial institution and non-financial institution auditors, 0.65 and 0.69, are relatively higher than the level of consensus for the students (0.61). The results provide support for both $H_{2c\text{-}ii}$ (financial institution auditor *versus* students) and $H_{2c\text{-}iii}$ (non-financial institution auditor *versus* students).

LEVEL OF SELF INSIGHT WITHIN SUBJECT GROUPS

The level of self insight is measured by correlating the subject's objective and subjective perception of the importance of the five cues used in Part Two and Part Three of the questionnaire respectively. The subjective perception is provided by the subjects in Part Three of the questionnaire where they are required to assign weights to the five cues according to their belief about the level of reliance they place on those cues when evaluating the strength of the internal control structure. The objective perception for each subject is obtained through the internal control evaluation performed by the subjects in Part Two of the questionnaire and is computed as follows:

1) The descriptive ANOVA or the objective perception of the importance of each of the five cues is derived using the F-ratio for the five main effects of the cues. Each cue constitutes a main effect. The five cues are repetitive across the sixteen cases which have been pre-answered, Yes or No. A "1" is allocated to a "Yes" cue and a "0" for a "No" cue. As such, for Case One which has been pre-answered "Yes" for all the cues, five ones are allocated, one for each cue. For Case Two whereby the five cues have been pre-answered "YES", "YES", "YES", "NO" and "NO", three "1" and two "0" are allocated. The two cases are provided

in Figure 5. The remaining fourteen cases are similarly modeled for each subject. This technique of analysis was developed by Hoffman, Slovic and Rorer (1968) and was utilised in Ashton (1974), Ashton and Brown (1980) and Ashton and Kramer (1980).

The internal control evaluation indicated by the subject will vary from 1, weakest, to 7, strongest, depending on the subjects' judgement based on the five internal control cues. For each subject, the following data, in relation to the sixteen cases, are used to analyse via the ANOVA, the systematic responses to patterns of answers. For example, the sixteen evaluations for the sixteen cases and the "0" or "1" allocation of the five cues for the sixteen cases in relation to Subject One are as follows:

Descriptive ANOVA for Subject One

Cases	I/C Strength	Cue 1	Cue 2	Cue 3	Cue 4	Cue 5
Case 1	7	1	1	1	1	1
Case 2	5	1	1	1	0	0
Case 3	6	1	1	0	1	0
Case 4	4	1	1	0	0	1
Case 5	4	1	0	1	1	0
Case 6	3	1	0	1	0	1
Case 7	4	1	0	0	1	1
Case 8	4	0	1	1	1	0
Case 9	3	0	1	1	0	1
Case 10	4	0	1	0	1	1
Case 11	2	0	0	1	1	1
Case 12	1	1	0	0	0	0
Case 13	2	0	1	0	0	0
Case 14	1	0	0	1	0	0
Case 15	2	0	0	0	1	0
Case 16	1	0	0	0	0	1

1/0 for cues - 1 for a cue pre-answered "Yes" and 0 for a cue pre-answered "No"
I/C Strength - 1 for weakest to 7 for strongest

FIGURE 5 EXAMPLES OF CASES IN PART THREE OF THE QUESTIONNAIRE

CASE NO. 1

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?	✔	
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?	✔	
3. Are formal procedures established for internal verification of gross pay amounts and deductions?	✔	
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?	✔	
5. Are formal procedures established for internal verification of account classification?	✔	

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 2

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?	✔	
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?	✔	
3. Are formal procedures established for internal verification of gross pay amounts and deductions?	✔	
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?		✔
5. Are formal procedures established for internal verification of account classification?		✔

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

1. Cont'd

The internal control evaluation for each of the sixteen cases is dependent upon the five cues provided. Each cue, cue 1 to cue 5, is a main effect on the dependent variable and therefore, there are five main effects.[46]

No interaction effect is investigated as the results of prior research (Ashton and Kramer, 1980, p. 6) have indicated that there are no significant interaction effects. The interaction effect in Ashton (1974) were insignificant and Ashton and Brown (1980, p. 272) contended that interactions were quite unimportant in terms of explaining the variance in the auditor's judgements, even though eighty four interactions were estimated for each auditor. The investigation of multiple interaction is also limited by the degrees of freedom in the models for individual subjects.

However, it is acknowledged that the lack of significant interactions found in this and prior studies requires further investigation. Auditors undergo a lengthy audit from planning, tests of controls, substantive testing to analytical reviews at different points in time. The auditors are always receiving information about the

[46] Internal control strength = f [**Cue 1** + **Cue 2** + **Cue 3** + **Cue 4** + **Cue 5** + (Cue 1*Cue2) + (Cue 1*Cue 3) + (Cue1*Cue 4) + (Cue 1*Cue 5) + (Cue 2*Cue 3) + (Cue 2*Cue 4) + (Cue 2*Cue 5) +(Cue 3*Cue 4) + (Cue 3*Cue 5) + (Cue 4*Cue 5) + (Cue 1*Cue 2*Cue 3) + (Cue 1*Cue 2*Cue 4) + (Cue 1*Cue 2*Cue 5) + (Cue 2*Cue 3*Cue 4) + (Cue 2*Cue 3*Cue 5) + (Cue 3*Cue 4*Cue 5) + (Cue 1*Cue 2*Cue 3*Cue 4) + (Cue 1*Cue 2*Cue 3*Cue 5) + (Cue 2*Cue 3*Cue 4*Cue 5) + (Cue 1*Cue 2*Cue 3*Cue 4*Cue 5)]. The main effects are highlighted in bold.

1. Cont'd

clients. Their judgements are expected to be based on a whole range of information and not simply based on one piece of information. Therefore, the question of why the auditors in this internal control task did not frequently rely on interactions between pieces of information is an interesting question that may be interesting to investigate in a later study.

2) For each subject, the omega squared, ω^2 for each main effect or each cue, is computed based on the ANOVA in (1) and is used to quantify the proportion of variance in judgement attributable to each cue.[47] The ω^2 indicates the cue utilisation pattern for each subject. The ω^2 measures the extent to which each auditor utilised each of the five internal control cues/questions in formulating the internal control judgements.[48] Based on the internal control evaluations provided by Subject One, the ω^2 for each main effect obtained and the point allocation from the questionnaire, is presented in Table 9. The point allocation indicates the objective perception of the subject in relation to the level of reliance on each of the five cues present in the sixteen cases when evaluating the internal control strength. Table 10 documents the 138 subjects' objective judgement model, ω^2.

[47] Hay (1963, p. 325)
[48] Ashton (1974, p. 151)

TABLE 9 CORRELATION BETWEEN THE ω^2 AND POINT ALLOCATION OF SUBJECT ONE

Cues	ω^2	Pt Allocation
Cue 1	.289	30.00
Cue 2	.373	35.00
Cue 3	.027	10.00
Cue 4	.216	20.00
Cue 5	.006	5.00
Self insight index = 0.9878		

ω^2 - omega squared computed for Subject one
Pt Allocation - point allocation provided by Subject One in Part Three of the questionnaire
Self insight index - correlation between ω^2 and the point allocation

TABLE 10 THE SUBJECTS' OBJECTIVE JUDGEMENT MODEL (ω^2 FOR EACH OF THE FIVE CUES)

Subjects	Cue 1	Cue 2	Cue 3	Cue 4	Cue 5
S1	0.29	0.37	0.03	0.22	
S2	0.29	0.21		0.21	
S3	0.39	0.16	0.06	0.23	0.06
S4	0.25	0.25	0.18	0.18	0.07
S5					
S6	0.14	0.5		0.2	
S7	0.1	0.1	0.18	0.27	0.1
S8					
S9	0.26	0.26	0.12	0.12	
S10	0.49	0.23	0.11	0.11	
S11	0.62	0.12	0.04	0.08	
S12	0.07	0.13		0.59	0.07
S13	0.46	0.2			
S14	0.41			0.3	
S15	0.31	0.18	0.24		
S16	0.41	0.41			
S17	0.48	0.1		0.1	
S18	0.46	0.14	0.14		
S19	0.16	0.7	0.04		
S20	0.57			0.21	0.06
S21		0.15	0.23	0.44	
S22	0.22	0.16	0.07	0.38	
S23	0.25	0.18		0.34	
S24	0.01	0.15	0.2	0.6	
S25	0.11	0.44			
S26	0.51	0.24			
S27	0.39	0.39	0.05	0.05	
S28	0.23	0.23	0.15	0.15	
S29	0.38	0.38			
S30	0.48	0.16			
S31	0.29	0.2	0.13	0.2	0.04
S32	0.36	0.07	0.03	0.36	0.03
S33	0.09	0.6	0.05	0.14	
S34			0.46	0.46	
S35	0.5	0.21	0.08	0.14	
S36		0.49		0.21	
S37	0.33	0.33	0.1	0.05	
S38	0.54	0.19	0.08	0.13	
S39	0.29	0.21	0.09	0.21	
S40	0.26	0.26	0.09		
S41	0.32	0.16	0.05	0.32	0.05
S42	0.19	0.05	0.4	0.19	0.05
S43	0.51	0.09		0.09	
S44	0.34	0.09	0.15	0.15	
S45	0.3				
S46	0.38	0.21	0.09		
S47	0.19	0.51	0.15		
S48	0.28	0.47	0.08		
S49	0.46	0.31	0.05		
S50	0.39	0.3		0.05	
S51	0.31	0.31		0.17	
S52			0.16	0.42	0.098
S53	0.27	0.37	0.05	0.18	
S54					
S55	0.29	0.39			
S56	0.53	0.2			
S57	0.3	0.23			
S58	0.39	0.31	0.07	0.17	0.02
S59	0.37	0.2	0.13		0.04
S60	0.22	0.42		0.14	
S61	0.54	0.08			
S62	0.28	0.2	0.2	0.07	0.07
S63	0.71	0.15			0.03
S64	0.32	0.41		0.12	
S65	0.29	0.15		0.38	
S66					
S67	0.19	0.09	0.19	0.34	
S68	0.18	0.26	0.12	0.26	0.07
S69	0.07	0.49	0.03	0.31	0.07

Subjects	Cue 1	Cue 2	Cue 3	Cue 4	Cue 5
S70	0.28	0.37			
S71	0.34	0.18	0.12	0.18	0.07
S72	0.35	0.17		0.1	
S73	0.17	0.11		0.43	
S74	0.19	0.62	0.05	0.02	
S75	0.19	0.19		0.11	
S76	0.33	0.25			
S77	0.05	0.44		0.34	
S78	0.3	0.4	0.03		0.08
S79	0.14	0.25	0.32	0.06	
S80	0.58	0.15		0.05	
S81			0.26	0.39	
S82	0.51	0.11			
S83	0.13	0.39	0.2		
S84	0.16			0.24	
S85	0.45	0.2	0.08	0.13	
S86		0.23		0.15	
S87	0.13	0.2		0.2	
S88		0.26			
S89	0.29	0.13	0.2	0.29	
S90	0.28	0.13	0.2	0.2	0.07
S91	0.16	0.16			
S92					
S93	0.08	0.12	0.44	0.15	
S94					
S95				0.23	
S96					
S97	0.41	0.1		0.1	
S98	0.37	0.19	0.07		0.12
S99		0.29			
S100	0.14	0.19	0.19	0.32	0.06
S101	0.39	0.27			
S102	0.36	0.45	0.1	0.03	0.03
S103	0.22	0.22		0.22	
S104	0.63	0.22			
S105	0.43	0.1			
S106	0.27	0.35			
S107	0.51	0.17			
S108	0.23	0.4	0.06	0.16	
S109		0.32		0.32	
S110	0.07	0.41		0.11	0.11
S111	0.45	0.34	0.06	0.06	
S112	0.63				
S113					
S114	0.2	0.35	0.09	0.2	0.09
S115		0.12		0.35	
S116	0.12	0.17	0.17	0.3	0.17
S117	0.25				
S118		0.4			
S119	0.42	0.2			
S120	0.17	0.17	0.09		
S121	0.65	0.07			
S122			0.16		
S123	0.13	0.29	0.07	0.29	
S124	0.4	0.4			
S125	0.27	0.16	0.11	0.21	0.16
S126	0.04	0.07	0.23	0.48	0.12
S127	0.57	0.06	0.06	0.19	
S128	0.26	0.34	0.13		
S129	0.32	0.18			
S130	0.35	0.18	0.06	0.26	0.06
S131	0.51	0.15		0.09	
s132	0.37	0.24		0.09	
s133					
s134	0.25	0.25	0.16	0.16	0.04
s135	0.31	0.57	0.02	0.02	0.02
s136	0.31	0.22	0.14	0.14	
s137	0.54	0.11	0.07	0.11	
s138	0.32	0.41		0.11	

The figures presented in the columns are the ω^2 of each individual subject (shown in rows). Only the ω^2 with 0.05 level of significance are reported.

3. The ω^2 and Point Allocation are then correlated to obtain the self insight index for the subject. For Subject One, the self insight index is 0.9878, as reported in Table 9 previously, indicating a high level of correlation between the objective perception, ω^2, and subjective perception, point allocation . The above procedure is repeated for all subjects to obtain a self insight index for each individual subject using the Pearson Correlation. The Pearson correlation is computed on the average ranks due to the large numbers of ties that occurred.[49] Table 11 documents the results for the level of self insight in relation to the various subject groups.

[49] Ashton and Kramer (1980, p. 10). The responses from the subjects in this thesis support this statement as subjects consistently evaluated more than one case on the same strength or weakness. In other words, for each subject, there were numerous cases whereby the subject has selected the same internal control strength. Taking Subject One as an example, 3 cases are evaluated as "extremely weak", 3 as "very weak", 2 as "substantial weakness", 5 as "some weakness", 1 as "marginally adequate", 1 as "adequate" and 1 as "strong".

TABLE 11 LEVEL OF SELF INSIGHT FOR EACH GROUP CLASSIFIED ACCORDING TO EACH HYPOTHESIS

Hypotheses	Groups	Mean SI Index
H_{3a} : Knowledge effect on the level of self insight		
H_{3a}	- subjects with more than four correct answers (n=51)	0.76
	- subjects with four or less correct answers (n=87)	0.74
	U = 1926.5	
	1-tailed p = 0.192	
H_{3b} : Compliance audit experience effect on the level of self insight		
H_{3b-i}	Auditors with predominantly compliance experience (n=19)	0.84
	Auditors with predominantly substantive experience (n=36)	0.80
	U = 284	
	1-tailed p = 0.232	
H_{3b-ii}	Auditors with predominantly compliance experience (n=19)	0.84
	Students (n=80)	0.70
	U = 489	
	1-tailed p = 0.023	
H_{3b-iii}	Auditors with predominantly substantive experience (n=36)	0.80
	Students (n=80)	0.70
	U = 1131	
	1-tailed p = 0.048	
H_{3c} : Financial institution audit experience effect on the level of self insight		
H_{3c-i}	Auditors with FI Experience (n=24)	0.82
	Auditors without FI Experience (n=32)	0.81
	U = 365	
	1-tailed p = 0.478	
H_{3c-ii}	Auditors with FI Experience (n=24)	0.82
	Students (n=80)	0.70
	U = 671	
	1-tailed p = 0.034	
H_{3c-iii}	Auditors without FI Experience (n=32)	0.81
	Students (n=80)	0.70
	U = 979	
	1-tailed p = 0.038	
Additional tests:		
	Auditors with predominantly compliance experience (n=19)	0.84
	Auditors with predominantly substantive experience (n=36)	0.80
	Students (n=80)	0.70
	KW = 5.5313	
	1-tailed p = 0.032	
	Auditors with FI Experience (n=24)	0.82
	Auditors without FI Experience (n=32)	0.81
	Students (n=80)	0.70
	KW = 5.1392	
	1-tailed p = 0.038	

To test whether a more accurate level of knowledge resulted in a higher level of self insight, H_{3a}, the subjects are classified into the following groups:

1) subjects with more than four correct answers in Part One of the questionnaire, and
2) subjects with four or less correct answers in Part One of the questionnaire.

For each group, a mean self insight index is obtained and the mean indices for the two groups are then compared using the Mann Whitney U test. The Mann-Whitney U test allows for testing group differences when the populations are not normally distributed or when it cannot be assumed that the samples are from populations that are equal in variability.[50] It is an alternative to the t-test for two independent samples.

The self insight indices, obtained through Pearson Correlation, were quite high for both the high and low internal control knowledge groups, being 0.76 and 0.74 respectively. While they were marginally higher for the high knowledge group, the difference is not significant and thus there is no statistical support for H_{3a} ($U = 1926.5$, $p = 0.192$).

The self insight indices are 0.84 and 0.80 for the auditors with compliance based audit experience and the auditors with substantive based audit experience respectively. The indices for the two auditor groups are not significantly different at five percent level. Thus, the results render no support for $H_{3b\text{-}i}$ ($U = 284$, $p = 0.232$). This indicates that there is no experience effect, as measured by compliance based audit experience, on the level of self-insight. The self insight index for the auditors with predominantly

[50] Zikmund (1994, p. 539).

compliance based audit experience (0.84) is significantly higher (U = 489, p = 0.023) than the students' (0.70). Similarly, the index for the auditors with predominantly substantive based audit experience (0.80) is also significantly higher (U = 1131, p = 0.048) than the students' (0.70). This renders support for both $H_{3b\text{-}ii}$ and $H_{3b\text{-}iii}$, indicating a compliance and substantive audit experience effect on the level of self insight for auditors *versus* students..

As is to be expected, the Kruskal-Wallis test also indicates that the three groups, auditors with predominantly compliance based audit experience, auditors with predominantly substantive audit experience and students, have significantly different self insight indices (KW = 5.5313, p = 0.032).

Similarly, the self insight indices are not significantly different at 0.82 and 0.81 for the financial institution and non-financial institution auditors respectively indicating no experience effect and thus, $H_{3c\text{-}i}$ is not supported (U = 365, p = 0.478).

Comparing the mean self insight indices for financial institution auditors (0.82) and students (0.70), there appears to be a significant experience effect on the level of self insight which rendered support for $H_{3c\text{-}ii}$ (U = 671, p = 0.034). For non-financial auditors and students, the self insight indices, being 0.81 and 0.70 are significantly different (U = 979, p = 0.038). As such, $H_{3c\text{-}iii}$ is supported. The Kruskal-Wallis test also indicates that the three groups, financial institution auditors, non-financial institution auditors and students, have significantly different self insight indices (KW = 5.1392, p = 0.038), a result driven by the difference between students and auditors. A further analysis based on the number of years of financial institution experience

indicates that there is no experience impact on the level of self insight at the 0.05 level of significance ($t = -0.703$, $p = 0.243$).

ADDITIONAL ANALYSIS

As a limited additional test for consensus, the ω^2 for each of the five main effects is correlated to obtain a correlation coefficient for each subject pair. This assists in identifying pairs of subjects with highly and lowly correlated ω^2.

The descriptive ANOVAs, i.e. objective judgement models, for eight subject pairs are reported in Table 12. The ω^2 for the five cues of each subject is correlated with the ω^2 of each of the remaining one hundred and thirty eight subjects. Table 12 details two groups of paired subjects, four pairs of subjects with highly correlated ω^2 and four pairs of subjects with lowly correlated ω^2. From the correlation coefficients in Table 12, Panel A and B respectively, it is noted that subject pairs comprising subjects 35 and 85, 16 and 29, 13 and 26, and; 50 and 57 have relatively high correlation coefficients; while subject pairs comprising subjects 59 and 116, 78 and 126, 18 and 52, and; 66 and 69 have relatively low correlation coefficients.

TABLE 12 ω^2 OF SUBJECTS WITH A HIGH/LOW CORRELATION COEFFICIENT (THE CORRELATION COEFFICIENT IS COMPUTED BY CORRELATING THE FIVE ω^2 OF A PAIR OF SUBJECTS)

Panel A : Subjects With Highly Correlated ω^2

	subject 35	subject 85	subject 16	subject 29	subject 13	subject 26	subject 50	subject 57
Cue 1	0.50	0.45	0.41	0.38	0.46	0.51	0.39	0.30
Cue 2	0.21	0.20	0.41	0.38	0.20	0.24	0.30	0.23
Cue 3	0.08	0.08	0.01	0.01	-0.01	-0.02	-0.01	-0.01
Cue 4	0.14	0.13	0.03	0.03	0.01	0.03	0.05	0.06
Cue 5	0.01	0.02	-0.01	-0.01	-0.02	-0.02	-0.02	-0.02
Pearson Correlation	0.9998		0.9998		0.9991		0.9971	

Panel B : Subjects with Lowly Correlated ω^2

	subject 59	subject 116	subject 78	subject 126	subject 18	subject 52	subject 66	subject 69
Cue 1	0.37	0.12	0.30	0.04	0.46	0.02	0.12	0.07
Cue 2	0.20	0.17	0.40	0.07	0.14	0.005	-0.04	0.49
Cue 3	0.13	0.17	0.03	0.23	0.14	0.16	0.05	0.03
Cue 4	0.01	0.30	0.00	0.48	0.03	0.40	-0.04	0.31
Cue 5	0.04	0.17	0.08	0.12	0.03	0.10	0.00	0.07
Pearson Correlation	-0.7590		-0.7431		-0.7117		-0.7147	

With respect to compliance/substantive experience, all the auditor subjects in the low correlation group (subjects 18 and 126) and the high correlation group (subjects 13, 16, 26, 29 and 35) have predominantly substantive audit experience The remaining subjects are students. Furthermore, six of the eight subjects in the low correlation group were in the low knowledge category (subjects 18, 59, 66, 78 and 116) while only three of the eight subjects in the high correlation group were in the low knowledge category (subjects 50, 57 and 85). Based on the current analysis of the 16 subjects, it could be interpreted that compliance experience may not have an effect on the level of consensus but the level of knowledge accuracy may have an effect on the level of consensus.

For the group with low correlation coefficients, one is a financial institution auditor (subject 126), one is a non-financial institution auditor (subject 18) while the rest are students (subjects 52, 59, 66, 69, 78 and 116). On the other hand, for the group with high correlation coefficients, five of the eight are non-financial institution auditors (subjects 13, 16, 26, 29 and 35) while the remaining three are students (subject 50, 57 and 85). This analysis indicates that non-financial institution auditors may possess more expertise in internal control evaluation compared to financial institution auditors and students, which may result in higher levels of consensus.

However, it should be noted that the conclusions above are limited to the number of subjects included in the analysis.[51] A complete analysis encompassing all 138

[51] To prevent any distortion in the analysis, unmotivated subjects have not been included. Unmotivated subjects are subjects who did not complete the questionnaire with adequate effort, thus affecting the generalisability of the results. Examples include subjects who did not fully complete the demographics section of the questionnaire. For a more detailed discussion of the treatment of unmotivated subjects, refer to Chapter 7, section on limitations.

subjects is beyond the scope of this thesis. Future research could investigate differences or similarities of the individual subjects' objective utilisation of the cues.

Additional tests were conducted to examine recency effects. The levels of knowledge accuracy, consensus and self insight were correlated with the number of months since the last financial institution was audited. The results are positive correlations indicating a reversed recency effect. This effect is significant only for knowledge accuracy, however. The correlation coefficients are as follows:

1) 0.354 (1-tailed $p = 0.000$) for the correlation between the number of months since the last financial institution audit and knowledge accuracy;
2) 0.1219 (1-tailed $p = 0.116$) for the correlation between the number of months since the last financial institution audit and the level of consensus in internal control evaluations; and
3) 0.2722 (1-tailed $p = 0.074$) for the correlation between the number of months since the last financial institution audit and the level of self insight in internal control evaluations.

As previous results in this study did not provide support for the financial institution experience effect, it was unlikely that a recency effect based on financial institution experience would be supported. Furthermore, the results are consistent with Trotman and Wright (1996) where the results indicated no recency effect for students, seniors or managers in the performance of the internal control task. The lack of recency effects could be attributable to task differences in that detailed compliance work is usually performed by auditors at the junior level while senior auditors are responsible for reviewing the work performed by the junior auditors. According to Bonner

(1990), the knowledge required to perform the task may be gained early in an auditor's career and decay over time. In this study, only one of the twenty four financial institution auditors has less than three years audit experience. As such, the senior auditors in this study may have less accurate knowledge to work with in the first instance. Further research could investigate recency effects using subjects comprising more junior auditors and/or based on the timing of the last compliance based audit. The results in this study indicated an experience effect, in terms of compliance based audit experience, on the level of consensus which could provide further support for a recency effect based on compliance based audit experience.

SUMMARY

Table 13 summarises the results of the hypotheses testing. The results support twelve of the twenty hypotheses. Results are mixed for the three sets of hypotheses, the accuracy hypotheses, self insight hypotheses and the consensus hypotheses.

In relation to the knowledge accuracy hypotheses, there are knowledge differences in the predicted direction for the following groups:

1. auditors with predominantly compliance based audit experience and students,
2. auditors with predominantly substantive based audit experience and students,
3. financial institution auditors and students; and
4. non-financial institution auditors and students.

However, there are no knowledge differences between:

1. auditors with predominantly compliance based audit experience and auditors with predominantly substantive based audit experience; and
2. financial institution auditors and non-financial institution auditors.

There is support for the consensus hypotheses in relation to the following groups:

1. auditors with predominantly compliance based audit experience and auditors with predominantly substantive based audit experience,
2. auditor with predominantly compliance based audit experience and students,
3. financial institution auditors and students; and
4. non-financial institution auditors and students.

TABLE 13 SUMMARY OF RESULTS

Hypotheses	Results	Conclusion
H_1 : Accuracy of internal control evaluations increases as knowledge/extensive audit experience increases		
$H_{1a\text{-}i}$	$p = 0.417$	No compliance audit experience effect on knowledge (In predicted direction)
$H_{1a\text{-}ii}$	$p = 0.000$	Experience effect on knowledge (auditors with predominantly compliance based experience *versus* students)
$H_{1a\text{-}iii}$	$p = 0.000$	Experience effect on knowledge (auditors with predominantly substantive based audit experience *versus* students)
$H_{1b\text{-}i}$	$p = 0.286$	No financial institution experience effect (financial institution auditors *versus* non-financial institution auditors) on knowledge (In predicted direction)
$H_{1b\text{-}ii}$	$p = 0.000$	Experience effect (financial institution auditors *versus* students) on knowledge
$H_{1b\text{-}iii}$	$p = 0.000$	Experience effect (non-financial institution auditors *versus* students) on knowledge
H_2 : Consensus on internal control evaluations increases as knowledge/extensive audit experience increases		
H_{2a}	$p = 0.133$	No knowledge effect on consensus (In predicted direction)
$H_{2b\text{-}i}$	$p = 0.023$	Compliance experience effect on consensus
$H_{2b\text{-}ii}$	$p = 0.003$	Experience effect (auditors with predominantly compliance based experience *versus* students) on consensus
$H_{2b\text{-}iii}$	$p = 0.183$	No experience effect (auditors with predominantly substantive based experience *versus* students) on consensus (In predicted direction)
$H_{2c\text{-}i}$	$p = 0.346$	No experience effect (financial institution auditors *versus* non-financial institution auditors) on consensus (Not in predicted direction)
$H_{2c\text{-}ii}$	$p = 0.044$	Experience effect (financial institution auditors *versus* students) on consensus
$H_{2c\text{-}iii}$	$p = 0.046$	Experience effect (non-financial institution auditors *versus* students) on consensus
H_3 : Self insight improves with increasing knowledge/extensive audit experience		
H_{3a}	$p = 0.192$	No knowledge effect on level of self-insight (In predicted direction)
$H_{3b\text{-}i}$	$p = 0.232$	No compliance based experience effect (compliance *versus* substantive) on the level of self-insight (In predicted direction)
$H_{3b\text{-}ii}$	$p = 0.023$	Experience effect (auditors with predominantly compliance based experience *versus* students) on the level of self-insight
$H_{3b\text{-}iii}$	$p = 0.048$	Experience effect (auditors with predominantly substantive based experience *versus* students) on the level of self-insight
$H_{3c\text{-}i}$	$p = 0.478$	No financial institution experience effect (financial institution auditors *versus* non-financial institution auditors) on the level of self-insight (In predicted direction)
$H_{3c\text{-}ii}$	$p = 0.034$	Experience effect (financial institution auditors *versus* students) on level of self-insight
$H_{3c\text{-}iii}$	$p = 0.038$	Experience effect (non-financial institution auditors *versus* students) on level of self-insight

The results were insignificant for the consensus hypothesis in relation to the high knowledge group *versus* low knowledge group category, the financial institution auditors *versus* non-financial institution auditors; and the auditor with predominantly substantive audit experience *versus* students group.

The results for the self insight hypotheses rendered support for the following groups:

1. auditors with predominantly compliance based audit experience and students;
2. auditors with predominantly substantive based audit experience and students;
3. financial institution auditors and students; and
4. non-financial institution auditors and students.

However, the results do not support the hypotheses in relation to the following groups:

1. high knowledge group and low knowledge group;
2. auditors with predominantly compliance based audit experience and auditors with predominantly substantive based audit experience; and
3. financial institution auditors and non-financial institution auditors.

In general, there seems to be limited support for the compliance experience hypotheses. There is a compliance experience effect on the level of consensus but none on knowledge and the level of self insight (see Table 14, Panel A). There is no support for the extensive audit experience hypotheses as measured by financial institution audit experience *versus* non-financial institution audit experience (see Table 14, Panel D). The results provide some support for the auditors with predominantly substantive based experience *versus* students hypotheses (see Table 14, Panel C) and full support for the following:

1. auditors with predominantly compliance based experience *versus* students hypotheses (see Table 14, Panel B),
2. financial institution auditor *versus* students hypotheses (see Table 14, Panel E); and
3. non-financial institution auditor *versus* students hypotheses (see Table 14, Panel F).

Furthermore, there is also no knowledge effect on the level of consensus or the level of self insight (see Table 15, Panel G).

In view of the above discussion, compliance based audit experience may be a useful factor in training an auditor to become an expert in internal control evaluations, as evidenced by the significant differences in the level of consensus between auditors with predominantly compliance based audit experience and auditors with predominantly substantive based audit experience. Furthermore, it is clear that some experience as opposed to no experience plays a key role in the accumulation of knowledge and performance of internal control evaluations. Hence, students do not perform as well as any of the auditor group in terms of accuracy, consensus or self insight.

TABLE 14 RESULTS FOR THE TWELVE EXTENSIVE AUDIT EXPERIENCE HYPOTHESES

Panel A : Compliance Experience Hypotheses

Hypotheses	Results	Conclusion
H_{1a-i}	$p = 0.417$	No compliance audit experience effect on knowledge (In predicted direction)
H_{2b-i}	$p = 0.023$	Compliance experience effect on consensus
H_{3b-i}	$p = 0.232$	No compliance experience effect (compliance *versus* substantive) on the level of self-insight (In predicted direction)

Panel B : Experience Hypotheses (Compliance based audit experience *versus* students)

Hypotheses	Results	Conclusion
H_{1a-ii}	$p = 0.000$	Experience effect on knowledge (auditors with predominantly compliance based experience *versus* students)
H_{2b-ii}	$p = 0.003$	Experience effect (auditors with predominantly compliance based experience *versus* students) on consensus
H_{3b-ii}	$p = 0.023$	Experience effect (auditors with predominantly compliance based experience *versus* students) on the level of self-insight

Panel C : Experience Hypotheses (Substantive based audit experience *versus* students)

Hypotheses	Results	Conclusion
H_{1a-iii}	$p = 0.000$	Experience effect on knowledge (auditors with predominantly substantive based audit experience *versus* students)
H_{2b-iii}	$p = 0.183$	No experience effect (auditors with predominantly substantive based experience *versus* students) on consensus (In predicted direction)
H_{3b-iii}	$p = 0.048$	Experience effect (auditors with predominantly substantive based experience *versus* students) on the level of self-insight

Panel D : Financial Institution Experience Hypotheses

Hypotheses	Results	Conclusion
H_{1b-i}	$p = 0.286$	No financial institution experience effect (financial institution auditors *versus* non-financial institution auditors) on knowledge (In predicted direction)
H_{2c-i}	$p = 0.346$	No experience effect (financial institution auditors *versus* non-financial institution auditors) on consensus (Not in predicted direction)
H_{3c-i}	$p = 0.478$	No financial institution experience effect (financial institution auditors *versus* non-financial institution auditors) on the level of self-insight (In predicted direction)

Panel E : Financial Institution Experience Hypotheses (Financial Institution Auditors *Versus* Students)

Hypotheses	Results	Conclusion
H_{1b-ii}	$p = 0.000$	Experience effect (financial institution auditors *versus* students) on knowledge
H_{2c-ii}	$p = 0.044$	Experience effect (financial institution auditors *versus* students) on consensus
H_{3c-ii}	$p = 0.034$	Experience effect (financial institution auditors *versus* students) on level of self-insight

Panel F : Non-Financial Institution Experience Hypotheses (Non-financial institution Auditors Versus Students)

Hypotheses	Results	Conclusion
H_{1b-iii}	$p = 0.000$	Experience effect (non-financial institution auditors *versus* students) on knowledge
H_{2c-iii}	$p = 0.046$	Experience effect (non-financial institution auditors *versus* students) on consensus
H_{3c-iii}	$p = 0.038$	Experience effect (non-financial institution auditors *versus* students) on level of self-insight

Panel G : Knowledge Hypotheses

Hypotheses	Results	Conclusion
H_{2a}	$p = 0.133$	No knowledge effect on consensus (In predicted direction)
H_{3a}	$p = 0.192$	No knowledge effect on level of self-insight (In predicted direction)

CHAPTER 7 : SUMMARY AND DISCUSSION

RESULTS

Most prior research into auditor expertise begins by designating groups of experts and novices on the basis of general or task-specific experience; it then compares subject groups with respect to performance and/or cognitive dimensions such as knowledge contact or knowledge organisation (Bonner and Lewis 1991, p. 16). This study departs from the conventional approaches by classifying novices and experts based on:

1) knowledge level (high or low knowledge level), and

2) two measures of extensive internal control audit experience

- compliance/substantive based audit experience
- financial institution/non-financial institution (FI/NFI) experience)

The results of this study show that the level of accuracy is not significantly affected by compliance based audit experience or financial institution audit experience. The level of consensus seems to be affected by the level of knowledge and the extensive internal control audit experience proxy, compliance based audit experience but not financial institution experience. There is no significant knowledge or extensive audit experience effect on the level of self insight. However, there is clear indication that significant differences exist between students and auditors in relation to knowledge, consensus and self insight levels.

The results indicate that the subjects with more extensive experience do not possess a higher level of knowledge. In other words, the level of knowledge does not differ between auditors with predominantly compliance audit experience and auditors with predominantly substantive audit experience. Neither does the level of knowledge differ for auditors with or without financial institution experience. However, when comparing the test scores for auditors and students, it makes a difference whether the subject has some or no audit experience.

A higher level of knowledge is not significantly associated with better performance in relation to the consensus measure or the self insight measure, although the results are in the predicted direction.

When experience is measured in terms of compliance based audit experience, the more experienced subjects exhibit better performance in terms of the level of consensus but not the level of self insight. It should be noted that not only is there a difference in the level of knowledge accuracy, there is also a noticeable difference in the level of consensus between auditors and students. This indicates that some experience compared to no experience is important in attaining a higher level of consensus. These results also indicate that "performance" is multi-faceted in that subjects do not attain high levels of knowledge accuracy, consensus and self insight concurrently. Further research in relation to expertise should explore all aspects of performance measures and investigate the specific variables affecting each performance measure.

Subjects with financial institution experience do not display a higher level of consensus or self insight. As previously mentioned, this could be due to the specialised nature of the industry. Although these auditors are more exposed to compliance testing, the specific nature of the compliance testing does not necessarily allow these auditors to apply the acquired "specific" internal control knowledge to a general internal control context such as payroll.

Furthermore, the internal control reporting requirement for financial institution clients may not be very different from the documentation of the compliance testing in the audit working papers and the management report for the non-financial institution clients. The amount of time and investigation devoted to the review of the internal control structure may not differ significantly between financial institution audits and non-financial institution audits.

As a result of the two reasons stated above, the level of knowledge, consensus and self insight may not differ significantly between financial institution auditors and non-financial institution auditors. Nevertheless, the students display a lower level of consensus and self insight compared to both the financial institution and non-financial institution auditors.

SIGNIFICANCE OF RESULT

The results in this study generally support the results from several prior studies of judgement differences between students and auditors, whereby there were differences in the levels of knowledge accuracy, consensus and self insight between students and

experienced auditors.[52] According to Ashton and Kramer (1980, p. 12), students may be good surrogates if the purpose of the research is for the general improvement of human judgement but not for research aiming to improve decision making on specific tasks. Nevertheless, Ashton and Kramer (1980, p. 12) recommended that:

> "where feasible, future behavioural accounting research projects might include student subjects ... in order to evaluate the importance of experience, wealth, age or other factors to the issue under investigation ... When the responses of the two groups differ substantially, one or more of these factors are important".

The results in this study clearly indicated that there are significant differences between students and auditors in relation to the levels of knowledge accuracy, consensus and self insight of internal control evaluation. Therefore, having some experience as opposed to having no experience created differences in the knowledge and performance on internal control evaluation.

According to Bonner and Lewis (1991, p. 18), performance is probably affected by knowledge organisation, strategies and motivation. Bonner and Lewis (1990) also emphasized that future research must delineate expertise on the basis of very specific training, experience and ability variables or proxies for those variables in the form of

[52] Ashton (1974) found significant differences (p = 0.04) in the levels of consensus between the more experienced (0.68) and less experienced subject groups (0.72) but in the wrong direction. Ashton and Brown (1980) found differences in the levels of consensus between the more experienced auditors and the less experienced auditors. Hamilton and Wright (1982) found that the more experienced subjects obtained a higher level of self insight. Both Bonner and Lewis (1990) and Libby and Tan (1994) found that there was a general experience effect on the performance of internal control evaluations.

knowledge or aptitude test scores. The results of this study provide support for this statement. Prior studies generally measure internal control expertise in terms of the positions held at firms and the total number of years of audit experience. This study extends the experience measures from experience to knowledge level. Furthermore, in addition to general audit experience, compliance based audit experience is an additional proxy for expertise in internal control evaluation.

The results also have several implications for audit practice. First, since there are no differences in the level of knowledge, consensus and self insight between financial and non-financial institution auditors; financial institution audit experience is not a good proxy for internal control expertise. On the other hand, auditors with compliance based audit experience exhibited higher levels of consensus. It may be appropriate to train auditors in internal control evaluation by sending them to audit clients in the general industry but with an emphasis on internal control. Specialised industry experience such as the insurance companies and financial institutions may require more extensive internal control evaluations but due to the specialised nature of the industry, auditors may acquire the requisite knowledge and skills in evaluating internal control structures of that particular industry which does not transfer to general industry.

Furthermore, it has been suggested that decision aids be used to improve training or to replace human decision making.[53] It is crucial in the development of the decision aid that appropriate experts are identified in modeling the audit judgements. In relation to

[53] Ashton and Brown (1980, p. 276)

the internal control evaluation task, the potential benefits to be realised by judgement modeling should be greater if more experienced auditors are modeled such as the auditors with predominantly compliance based audit experience. Judgements include the preliminary assessment of control risk to determine the extent of compliance testing and also the final assessment of control risk to determine the reliability of the internal control structure.

LIMITATIONS

Several possible limitations of this research exist in relation to the use of questionnaires. First, due to the limitation of the sample size, random sampling error could occur. Furthermore, the response rate was 28.5%, so the remaining 71.5% of auditors who did not respond would have contributed to the non-response error. There is no way on which non-response bias can be tested since the identities of respondents/non-respondents are unknown.

Second, unlike research exercises where subjects are financially rewarded for their participation in the questionnaire, the questionnaire was completed by the practising subjects at a time convenient to them. There is a lack of control over the circumstances under which the questionnaire was completed and the level of commitment in completing the questionnaire, although the subjects were instructed by the partner-in-charge to work individually and to take the questionnaire seriously. There were disguised questions in the questionnaires to identify subjects who have not completed the questionnaire with adequate effort.

The first case in Part Two of the questionnaire consisted of five cues, all of which have been pre-answered "Yes". Logically, the internal control structure should be evaluated as the strongest since there are no flaws in the system based on the cues provided. As such, a subject who evaluated the case other than "strong" would be identified as an unmotivated subject who had not given much thought to the questionnaire (n = 18). Furthermore, Part Three of the questionnaire required the subjects to allocate 100 points over the five cues to indicate the relative importance of each cue. Motivated subjects would have carefully allocated the 100 points accordingly and would have ensured that the points added up to 100. Subjects who did not ensure the additivity to 100 would be identified as unmotivated subjects (n = 5). The last part of the questionnaire comprised of demographics details provided by the subjects and unmotivated subjects are presumably those who failed to complete the section (n = 7).

The final group of subjects fulfilling the criteria of motivated subjects who undertook the questionnaire seriously totaled 101. Five subjects did not ensure that the point allocation in Part Three of the questionnaire added up to 100. Eighteen other subjects did not evaluate the internal control strength for case 1 as 7, strong or did not complete the sixteen cases in Part Two of the questionnaire in determining the internal control strength. did not complete the demographic details. Seven subjects failed to complete the demographic section, evaluate case 1 as strong (7) and/or ensure that the point allocation added up to 100. When the same analysis for the twenty hypotheses is conducted using the reduced number of subjects due to the elimination of the

unmotivated subjects, the results do not change significantly and the conclusions remain unchanged.

Third, the use of questionnaires with simplified case scenarios may restrict the generalisability of results. Other factors compensating for the lack of internal controls would have been considered in the performance of an actual audit task. It is acknowledged that realism in the study is a limiting factor but this limitation is overcome by the motivation level in the subjects. The internal validity/external validity trade-off is common to most research studies involving responses from auditors.

Fourth, the use of auditors from only one firm; and students from one tertiary institution has the potential of reducing the generalisability of the results as auditors from other firms and students from other institutions may possess different characteristics than the subjects studies here. However, auditors from all Big Six firms go through the same Professional Year program and differences should not be significant. Furthermore, the student subjects are from a reputable and established tertiary institution whose graduates are sometimes employed by the Big six accounting firm supplying the auditor subjects for this study. As such, there is no reason to expect the student subjects to perform differently from students in other institutions.

FUTURE RESEARCH

This study suggests the following research possibilities for future research. First, the study can be extended to investigate firm effects as different accounting firms have

different emphasis on audit procedures and different weights on required internal controls.[54]

Second, client effect can also be investigated. Different clients present different challenges to the auditors. Different business, internal control and structural environment other than financial institution/non-financial institution differences can provide the auditors with different forms of training. The difference in experience may result in differences in knowledge and performance levels.

Third, although the results indicate that there is no financial institution audit experience effect on knowledge and performance, other specific experience variables can be used. Public sector audit experience emphasizes internal control evaluations and since the nature of operations is less specific than for financial institutions, there can well be a possible experience effect if this variable is used. The question that has yet to be answered is whether the same results would be yielded for other industries which are general in nature but have an emphasis on internal control evaluation. Furthermore, would the financial institution auditors attain a higher level of performance if the task was modeled in the context of financial institutions?

Fourth, according to Ashton (1985, p. 185), if an individual's predictions agree strongly with those of others in a group, then that individual will tend to be among the most accurate in the group. This study can be extended to examine this statement and

[54] Bonner (1990) investigated the effect of task specific knowledge on audit experience and the knowledge differences between auditors from two different accounting firms. The results indicated knowledge differences and judgement differences as different audit firms possess different characteristics such as audit strategies.

also to investigate whether experts in internal control evaluations are also experts in other audit procedures such as analytical reviews and going concern judgements.

Fifth, in this research project, only one group of students is selected to participate in the questionnaire. Bonner, Davis and Jackson (1992) examined expertise inferred from the level of performance in a specific task in relation to issues identification in tax planning. The level of expertise is dependent upon the educational background of individual subjects. Institutions can adopt case-oriented instructions or rule-oriented instructions. Graduates from different institutions will acquire different problem solving skills. As such, future research can investigate whether knowledge and performance differences can be attributed to differences in educational background.

Sixth, the additional analysis identified 8 pairs of subjects who have highly correlated or lowly correlated omega squared, ω^2. Future research could conduct an analysis involving all subjects and investigate in more depth the characteristics of the subject pairs with high or low ω^2 correlation. Factors attributable to the correlation level can be identified. The level of knowledge accuracy, consensus and self insight for the 2 groups can be determined. Better performance is indicated by higher levels of knowledge accuracy, consensus and self insight. If subjects with high ω^2 correlation do exhibit better performance, the factors attributable to the highly correlated group can then be matched with the characteristics and abilities of the prospective employees during the screening process in the recruitment exercise of the accounting firms. This assists the accounting firms in selecting prospective employees with the maximum capabilities who will excel in the audit assignments.

Seventh, different tasks present different levels of complexity. A similar task but applied in different environments can also present different levels of complexity. For example, Part two of the questionnaire requires subjects to evaluate the internal control strength of the sixteen cases. Cases with all cues pre-answered "Yes" or "No" present less uncertainty to the subjects than cases with a combination of both "Yes" and "No" answers for the five cues. Future research can investigate if complexity is a factor in internal control evaluations and also whether auditors with extensive internal control audit experience perform better in more complex internal control tasks compared to auditors without extensive internal control audit experience.

Finally, the results indicate no financial institution effect on the level of knowledge, accuracy, consensus and self insight. It should be noted that the financial disasters are recent occurrences and the auditors are only beginning to realise the consequences and importance of the internal control review function. Significant results could flow from a replication of this study in a few years when the current emphasis on internal controls has taken effect.

As indicated from the above discussion, there is vast room for the study of audit expertise and many questions awaiting answers.

Appendix 1 : Model answer for Part two of the Questionnaire

According to Tubbs (1994, p. 792), each of the eight errors/irregularities violated one internal control objective as follows:

	Valid.	**Auth.**	**Compl.**	**Value.**
1. Customers failed to pay within the discount period and remitted the payment in full. Nevertheless, discounts were approved , and the amount of the discounts were misappropriated.		X		
2. Accounts receivable were aged incorrectly; potentially uncollectible amounts were not recognised..				X
3. Billings were recorded but goods were not shipped.	X			
4. Customer order specifications were not met as to type and/or quantity.				X
5. Lapping occurred.			X	
6. Management, employees or third parties received goods without being billed.			X	
7. Orders were in violation of the company's credit policies.		X		
8. Revenues were recorded in current period when they should have been recorded in the next period.	X			

Valid. = Validity (Recorded transactions are valid)
The structure cannot permit the inclusion of fictitious or non-existent transactions in journals or other accounting records.

Auth. = Authorisation (Transactions are properly authorised)
If a transaction that is not authorised takes place, it could result in a fraudulent transaction, and it could also have the effect of wasting or destroying company assets.

Compl. = Completeness (Existing transactions are recorded)
The client's procedures must provide controls to prevent the omission of transactions from the records.

Value. = Valuation (Transactions are properly valued)
An adequate structure includes procedures to avoid errors in calculating transactions at various stages in the recording process.

(adapted from Arens A. A., Loebbecke J. K., Best P. J. And Shailer G. E. P., *Auditing in Australia : An Integrated Approach*, Prentice Hall, 1990, p. 270)

The following provides further support for the model answer derived by Tubbs (1992) from a textbook source in relation to internal control objectives violated.[55]

1. Customers failed to pay within the discount period and remitted the payment in full. Nevertheless, discounts were approved , and the amount of the discounts were misappropriated.
Internal control objective violated : Authorisation
Proper Authorisation.[56] The auditor is concerned about authorisation at three key points: • credit must be properly authorised before a sale takes place; • goods should be shipped only after proper authorisation; and • prices, including base terms, freight and discounts, must be authorised. The first two controls are meant to prevent loss of company assets by shipping to fictitious customers or those who fail to pay for the goods. Price authorisation is meant to make sure the sale is billed at the price set by company policy.

2. Accounts receivable were aged incorrectly; potentially uncollectible amounts were not recognised..
Internal control objective violated : Valuation
Recorded sales are properly valued.[57] The correct valuation of sales transactions concerns ... correctly recording the amount billed in the accounting period.

[55] Refer to Arens et al (1990).
[56] ibid, p 354.
[57] ibid, p 357.

3. Billings were recorded but goods were not shipped.
Internal control objective violated : Validity
Recorded sales are valid.[58] The auditor is concerned with ... sales being included in the journal for which no shipment was made...

4. Customer order specifications were not met as to type and/or quantity.
Internal control objective violated : Valuation
Recorded sales are properly valued.[59] The correct valuation of sales transactions concerns shipping the amount of goods ordered...

5. Lapping occurred[60]
Internal control objective violated : Completeness
Existing transactions are recorded.[61] Cash received is recorded in the cash receipts journal.

[58] ibid, p. 355.
[59] ibid, p. 357.
[60] ibid, p. 362. Lapping is the postponement of entries for the collection of receivables to conceal an existing cash shortage. The fraud is perpetrated by a person who records cash in both the cash receipts journal and subsidiary accounts receivables ledger. Recording of cash receipts from one customer is deferred and the shortages is covered with receipts of another customer. These in turn are covered from the receipts of a third customer a few days later. The employee must continue to cover the shortage through repeated lapping, replace the stolen money or find another way to conceal the shortage. This fraud can be detected by comparing the name, amount and dates shown on remittance advices with cash receipts journal entries and related duplicate deposit slips.
[61] ibid, p. 360.

6. Management, employees or third parties received goods without being billed.
Internal control objective violated : Completeness
Existing sales transactions are recorded.[62] The tracing of shipping document to sales invoice and journal is a test for unbilled shipment, omitted transactions (completeness objective).

7. Orders were in violation of the company's credit policies.
Internal control objective violated : Authorisation
Sales are properly authorised.[63] It is necessary to test whether the company's general credit, shipping and pricing policies are being properly followed in the day-to day operations.

8. Revenues were recorded in current period when they should have been recorded in the next period.
Internal control objective violated : Validity
Recorded sales are valid.[64] The auditor is concerned with ... sales being included in journals for which no shipment was made.

[62] ibid, p. 356.
[63] ibid, p. 356.
[64] Ibid, p. 355.

Appendix 2 : The questionnaire used for distribution to auditor and student subjects

THE IMPACT OF AUDIT EXPERIENCE ON INTERNAL CONTROL EVALUATION

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Purpose of Study

The study evaluates the impact of different types and levels of experience on the auditors' assessments of internal control risk. It will be used to provide data essential for the completion of Ms Chew's Masters dissertation and to report to the audit firms concerning the variables influencing the auditors' internal control evaluation.

Criteria for Inclusion/Exclusion

The only criterion for selection of practising subjects is that half of the sample should comprise auditors who have audited financial institutions and the other half should comprise auditors who have not audited financial institutions.

Procedures for Completion of Questionnaire

This questionnaire will be used to study the general internal control knowledge of the auditors with experience in different industries. The three-part questionnaire will require approximately thirty minutes to complete. On completion, please place the completed questionnaire in the envelope provided. You are entitled to withdraw from this study at any time without prejudice, but your participation will be greatly appreciated.

Confidentiality

DO NOT PUT YOUR NAME ON THIS QUESTIONNAIRE. All responses will be held in strict confidence, and anonymity is guaranteed for any publications and presentations based on the questionnaire responses.

Concerns or Complaints

This study has obtained approval from the University Ethics Committee. Should you encounter any concerns of an ethical nature or the manner in which the project is conducted, you may contact the Executive Officer, Ms Chris Hooper, of the University Ethics Committee (Human Experimentation) at:
GPO Box 252C
Hobart Tasmania 7001
Telephone : (002) 202763

Results

The final results will be available upon request and distributed to the participating firms.

PART ONE

Listed on the next page are eight errors/irregularities which could be detected during an audit of any of your client(s). For **EACH** of the eight errors/irregularities, identify the **ONE** internal control objective (validity, authorisation, completeness or valuation) that is of most concern to you, i.e., which objective was most violated allowing the error to occur. Place a **tick** in the appropriate box. TICK ONLY **1 BOX** PER ROW.

	Valid.	Auth.	Compl.	Value.
1. Customers failed to pay within the discount period and remitted the payment in full. Nevertheless, discounts were approved, and the amount of the discounts was misappropriated.				
2. Accounts receivable were aged incorrectly; potentially uncollectible amounts were not recognised.				
3. Billings were recorded but goods were not shipped.				
4. Customer order specifications were not met as to type and/or quantity.				
5. Lapping occurred.				
6. Management, employees or third parties received goods without being billed.				
7. Orders were in violation of the company's credit policies.				
8. Revenues were recorded in the current period when they should be recorded in the next period.				

Valid. = Validity (Recorded transactions are valid)
The structure cannot permit the inclusion of fictitious or non-existent transactions in journals or other accounting records.
Auth. = Authorisation (Transactions are properly authorised)
If a transaction that is not authorised takes place, it could result in a fraudulent transaction, and it could also have the effect of wasting or destroying company assets.
Compl. = Completeness (Existing transactions are recorded)
The client's procedures must provide controls to prevent the omission of transactions from the records.
Value. = Valuation (Transactions are properly valued)
An adequate structure includes procedures to avoid errors in calculating transactions at various stages in the recording process.

(adapted from Arens A. A., Loebbecke J. K., Best P. J. and Shailer G. E. P., Auditing in Australia : An Integrated Approach, Prentice Hall, 1990, p 270)

PART TWO

You are the auditor of BK Ltd. The company employs 70 to 110 factory personnel, depending upon production requirements. The company has its own payroll department which processes the payroll on a microcomputer using a popular commercial payroll package. The following questions are included in the internal control questionnaire on control procedures for payroll transactions in BK Ltd:

1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?
3. Are formal procedures established for internal verification of gross pay amounts and deductions?
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?
5. Are formal procedures established for internal verification of account classification?

Set out in pages 4 to 11 are 16 different combinations of "yes" and "no" answers to each question. Assess the strength of the internal control structure of each case independently on a scale of 1 (extremely weak) to 7 (strong).

[1=extremely weak, 2=very weak, 3=substantial weakness, 4=some weakness, 5=marginally adequate, 6=adequate, 7=strong]

Indicate your assessment of each of the sixteen internal control structures by putting a **circle** round the number with the description which best corresponds to your evaluation.

CASE NO. 1

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?	✔	
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?	✔	
3. Are formal procedures established for internal verification of gross pay amounts and deductions?	✔	
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?	✔	
5. Are formal procedures established for internal verification of account classification?	✔	

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 2

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?	✔	
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?	✔	
3. Are formal procedures established for internal verification of gross pay amounts and deductions?	✔	
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?		✔
5. Are formal procedures established for internal verification of account classification?		✔

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 3

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?	✔	
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?	✔	
3. Are formal procedures established for internal verification of gross pay amounts and deductions?		✔
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?	✔	
5. Are formal procedures established for internal verification of account classification?		✔

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 4

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?	✔	
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?	✔	
3. Are formal procedures established for internal verification of gross pay amounts and deductions?		✔
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?		✔
5. Are formal procedures established for internal verification of account classification?	✔	

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 5

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?	✔	
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?		✔
3. Are formal procedures established for internal verification of gross pay amounts and deductions?	✔	
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?	✔	
5. Are formal procedures established for internal verification of account classification?		✔

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 6

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?	✔	
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?		✔
3. Are formal procedures established for internal verification of gross pay amounts and deductions?	✔	
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?		✔
5. Are formal procedures established for internal verification of account classification?	✔	

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 7

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?	✔	
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?		✔
3. Are formal procedures established for internal verification of gross pay amounts and deductions?		✔
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?	✔	
5. Are formal procedures established for internal verification of account classification?	✔	

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 8

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?		✔
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?	✔	
3. Are formal procedures established for internal verification of gross pay amounts and deductions?	✔	
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?	✔	
5. Are formal procedures established for internal verification of account classification?		✔

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 9

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?		✔
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?	✔	
3. Are formal procedures established for internal verification of gross pay amounts and deductions?	✔	
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?		✔
5. Are formal procedures established for internal verification of account classification?	✔	

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 10

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?		✔
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?	✔	
3. Are formal procedures established for internal verification of gross pay amounts and deductions?		✔
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?	✔	
5. Are formal procedures established for internal verification of account classification?	✔	

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 11

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?		✔
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?		✔
3. Are formal procedures established for internal verification of gross pay amounts and deductions?	✔	
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?	✔	
5. Are formal procedures established for internal verification of account classification?	✔	

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 12

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?	✔	
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?		✔
3. Are formal procedures established for internal verification of gross pay amounts and deductions?		✔
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?		✔
5. Are formal procedures established for internal verification of account classification?		✔

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 13

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?		✔
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?	✔	
3. Are formal procedures established for internal verification of gross pay amounts and deductions?		✔
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?		✔
5. Are formal procedures established for internal verification of account classification?		✔

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 14

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?		✔
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?		✔
3. Are formal procedures established for internal verification of gross pay amounts and deductions?	✔	
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?		✔
5. Are formal procedures established for internal verification of account classification?		✔

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 15

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?		✔
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?		✔
3. Are formal procedures established for internal verification of gross pay amounts and deductions?		✔
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?	✔	
5. Are formal procedures established for internal verification of account classification?		✔

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

CASE NO. 16

	Yes	No
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)?		✔
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated?		✔
3. Are formal procedures established for internal verification of gross pay amounts and deductions?		✔
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid?		✔
5. Are formal procedures established for internal verification of account classification?	✔	

extremely weak	very weak	substantial weakness	some weakness	marginally adequate	adequate	strong
1	2	3	4	5	6	7

PART THREE

The following five internal control indicators were in each of the 16 cases presented in Part Two. They may have different levels of importance in the assessment of control risk. Please assess the relative importance of the internal control indicators by allocating 100 points (a higher point would indicate a higher level of importance) across the five indicators in the boxes provided on the right.

e.g.

Indicator 1	X	These points must add up to 100.
Indicator 2	X	
Indicator 3	X	
Indicator 4	X	
Indicator 5	X	
TOTAL	100	

Internal Control Indicators	Level of Importance
1. Are formal procedures established for the authorisation of payroll, pay rates and actual hours worked (if applicable)? ----------	
2. Are the tasks of authorisation and payment in the payroll cycle adequately separated? ----------	
3. Are formal procedures established for internal verification of gross pay amounts and deductions? ----------	
4. Are formal procedures established for independent reconciliation of amounts stated in payroll preparation and actual amounts paid? ----------	
5. Are formal procedures established for internal verification of account classification? ----------	
TOTAL	100

PERSONAL DETAILS (FOR PRACTISING AUDITORS)

CURRENT FIRM EXPERIENCE

1) Type of Employer: (please circle)
   - international firm
   - national firm
   - local firm

2) Total audit experience with the **CURRENT** firm: _____ years _____ months

3) Current position held at firm: _____

TOTAL AUDIT EXPERIENCE

4) Total audit experience **TO DATE**: _____ years _____ months

FINANCIAL INSTITUTION AUDIT EXPERIENCE

If you have experience in auditing financial institutions (banks, building societies and credit unions), please fill in the following section.

5) Your first financial institution audit was conducted in (e.g. Jan'90): _____

6) Total number of financial institution audits performed since then: _____

Audited XYZ Ltd from f/y 1993 to 1995 = 3 financial institution audits performed

7) Your last financial institution audit was conducted in (e.g. Jan'96): _____.

COMPLIANCE Vs SUBSTANTIVE TESTING EXPERIENCE

*Throughout your audit career, you would have audited clients with reliable internal control structures whereby you plan extensive tests of controls and restricted substantive testing (**compliance based**); and clients without reliable internal control structures whereby you plan few tests of controls and extensive substantive testing (**substantive based**).*

10) Your total audit experience can be described as: (please circle)
   - predominantly compliance based
   - predominantly substantive based

THANK YOU FOR YOUR PARTICIPATION !!

PERSONAL DETAILS (FOR STUDENTS)

1) Age band: (please circle)
   - less than 21
   - 21 - 30
   - 31 - 40
   - over 40

2) Are you currently working in an accounting firm as an auditor?
   - if **YES**, answer the remaining questions
   - if **NO**, ignore the remaining questions

CURRENT FIRM EXPERIENCE

3) Type of Employer: (please circle)
   - international firm
   - national firm
   - local firm

4) Total audit experience with the **CURRENT** firm: _____ years _____ months

5) Current position held at firm: _____

TOTAL AUDIT EXPERIENCE

6) Total audit experience **TO DATE**: _____ years _____ months

FINANCIAL INSTITUTION AUDIT EXPERIENCE

If you have experience in auditing financial institutions (banks, building societies and credit unions), please fill in the following section.

7) Your first financial institution audit was conducted in (e.g. Jan'90): _____

8) Total number of financial institution audits performed since then: _____

Audited XYZ Ltd from f/y 1993 to 1995 = 3 financial institution audits performed

9) Your last financial institution audit was conducted in (e.g. Jan'96): _____.

COMPLIANCE Vs SUBSTANTIVE TESTING EXPERIENCE

*Throughout your audit career, you would have audited clients with reliable internal control structures whereby you plan extensive tests of controls and restricted substantive testing (**compliance based**); and clients without reliable internal control structures whereby you plan few tests of controls and extensive substantive testing (**substantive based**).*

10) Your total audit experience can be described as: (please circle)
   - predominantly compliance based
   - predominantly substantive based

THANK YOU FOR YOUR PARTICIPATION !!

References

Abdolmohammadi M. and A. Wright. 1987. An Examination of the Effects of Experience and Task Complexity on Audit Judgments. *The Accounting Review* 62 (January): 1-13.

American Institute of Certified Public Accountants. 1978. *Commission on Auditors' Responsibilities : Report, Conclusions and Recommendations.* Cohen Commission. New York: AICPA.

Arens A. A., J. K. Loebbecke, P. J. Best and G. E. P. Shailer. 1990. *Auditing in Australia - An Integrated Approach.* Australia: Prentice Hall.

Ashton A. H. 1985. Does Consensus Imply Accuracy in Accounting Studies of Decision Making?. *The Accounting Review* 60 (April): 173-185.

Ashton A. H. 1991. Experience and Error Frequency Knowledge as Potential Determinants of Audit Expertise. *The Accounting Review* 66 (April): 218-239.

Ashton R. H. 1974. An Experimental Study of Internal Control Judgments. *The Accounting Review* (Spring): 143-157.

Ashton R. H. and P. R. Brown. 1980. Descriptive Modeling of Auditors' Internal Control Judgments: Replication and Extension. *The Accounting Review* 18 (Spring): 269-277.

Ashton R. H. and S. S. Kramer. 1980. Students as Surrogates in Behavioural Accounting Research: Some Evidence. *The Accounting Review* 18 (Spring): 1-15.

Australian Accounting Research Foundation. 1995. Auditing Guidance Statement AGS 1008. *Audit Implications of Reserve Bank Prudential Reporting Requirements.*

Australian Accounting Research Foundation. 1995. Auditing Guidance Statement AGS 1010. *Audit Obligations of the Financial Institutions Scheme.*

Australian Accounting Research Foundation. 1995. Statement of Auditing Standard AUS 306 *Materiality.*

Australian Accounting Research Foundation. 1995. Statement of Auditing Standard AUS 402. *Risk Assessment and Internal Controls.*

Australian Accounting Standards Board and Public Sector Accounting Standards Board of the Australian Accounting Research Foundation. 1995. Exposure Draft ED 65. *Presentation and Disclosure of Financial Instruments.*

The Australian Society of CPAs and Institute of Chartered Accountants in Australia. 1993. *A Research Study on Financial Reporting and Auditing - Bridging The Expectation Gap.* Australia.

AWA v. *Daniels & Ors* (1992) 10 ACLC 933 [No. 1].

The *Banking Act 1959-1989.*

Bedard J. 1989. Expertise in Auditing-Myth or Reality. *Accounting, Organizations and Society* 14 (1/2): 113-131.

Blay S. And E. Clarke. 1993. *Australian Law of Financial Institutions.* Australia: Harcourt Brace.

Bonner S. E. 1990. Experience Effects in Auditing-The Role of Task-Specific Knowledge. *The Accounting Review* 65 (January): 72-92.

Bonner S. E., J. S. Davis & B. R. Jackson. 1992. Expertise in Corporate Tax Planning: The Issue Identification Stage. *Journal of Accounting Research* 30 (Supplement): 1-36.

Bonner S. E. and B. L. Lewis. 1990. Determinants of Auditor Expertise *Journal of Accounting Research* 28 (Supplement): 1-19.

Charness N. 1979. Components of Skills in Bridge. *Canadian Journal of Psychology* (March): 1-16.

Chase W. G. And H. A. Simon. 1973. "The Mind's Eye in Chess" in *Visual Information Processing* edited by W. G. Chase. New York : Academic Press.

Cochran W. G. and G. M. Cox. 1957. *Experimental Designs.* New York: John Wiley and Sons.

Committee on the Financial Aspects of Corporate Governance. 1992. *Report of the Committee on the Financial Aspects of Corporate Governance.* Cadbury Committee. London: Gee and Co. Ltd.

The *Commonwealth Banks Act 1951.*

The *Commonwealth Banks Act 1959.*

Daniels & Ors v. *AWA Ltd* (1995) 13 ACLC 614.

Einhorn H. 1974. Expert Judgement : Some Necessary Conditions and an Example. *Journal of Applied Psychology* (October): 562-571.

Financial Review. 12 September 1995.

Frederick D. M. 1991. Auditors' Representation and retrieval of Internal Control Knowledge. *The Accounting Review* 66 (April): 240-258.

Gaumnitz B. R., T. R. Nunamaker, J. J. Surdick and M. F. Thomas. 1982. Auditor Consensus in Internal Control Evaluation and Audit Program Planning. *Journal Of Accounting Research* 20 (Autumn): 745-755.

Gill G. S. and G. W. Cosserat. 1993. *Modern Auditing in Australia.* Australia: Jacaranda Wiley Ltd.

Hackenbracj K. 1993. The Effect of Experience with Different Sized Clients on Auditor Evaluation of Fraudulent Financial Reporting Indicators. *Auditing-A Journal of Practice and Theory* 12 (Spring): 99-110.
Hamilton R. E. And W. F. Wright. 1982. Internal Control Judgments and Effects of Experience: Replications and Extensions. *Journal of Accounting Research* 20 (Autumn): 756-766.

Hays W. L. 1963. *Statistics.* USA: Holt, Rinehart and Winston Inc.

Heywood D. 1995. Derivatives - What Shape Are We In?. *Financial Forum* (June): 4.

Hoffman P. J., P. Slovic and L. G. Rorer. 1968. An Analysis-of-Variance Model in the Assessment of Configural Cue Utilisation in Clinical Judgement. *Psychological Bulletin* (May): 338-349.

Humphrey C., P. Moizer and S. Turley. 1992. *The Audit Expectations Gap in the United Kingdom.* London: The Institute of Chartered Accountants in England and Wales.

The Institute of Chartered Accountants in Ireland. 1992. *Report of the Commission of Inquiry into the Expectations of Users of Published Financial Statements.* Ryan Commission. Dublin: ICAI.

Jeffrey C. 1992. The Relation of Judgment, Personal Involvement and Experience in the Audit of Bank Loans. *The Accounting Review* 67 (October): 802-819.

Keen S. 1995. Catching Up With Derivatives *New Accountant* (August): 5.

Libby R. and D. M. Frederick. 1990. Experience and the Ability to Explain Audit Findings. *Journal of Accounting Research* 28 (Autumn): 348-367.

Libby R. and J. Luft. 1993. Determinants of Judgment Performance in Accounting Settings: Ability, Knowledge, Motivation and Environment. *Accounting, Organisations and Society* 18: 425-450.

Libby R. and H. T. Tan. 1994. Modeling the determinants of Audit Expertise. *Accounting, Organisations and Society* 19: 701-741.

Mayper A. 1982. Consensus of Auditors' Materiality Judgments of Internal Accounting Control Weaknesses. *Journal Of Accounting Research* 20 (Autumn): 773-784.

Mendahall W., J. E. Reinmuth, R. Beaver and D. Duhan. 1986. *Statistics for Management and Economics.* Boston: Duxbury Press.

The Mercury. 28 August 1995.

Moeckel C. 1990. The Effect of Experience on Auditors' Memory Errors. *Journal of Accounting Research* 28 (Autumn): 368-387.

Moeckel C. L. and R. D. Plumlee. 1989. Auditors' Confidence in Recognition of Audit Evidence. *The Accounting Review* 64 (October): 653-666.
Murray D and R. N. Regel. 1992. Accuracy and Consensus in Accounting Studies in Decision Making. *Behavioural Research in Accounting* 4: 127-139.

National Commission on Fraudulent Financial Reporting. 1987. *Report of the National Commission on Fraudulent Financial Reporting.* Treadway Commission. Washington.

Pratt J. and J. D. Stice. 1994. The Effects of Client Characteristics on Auditor Litigation Risk Judgments, Required Audit Evidence and Recommended Audit Fees. *The Accounting Review* 69 (October): 639-656.

The *Reserve Bank Act 1959.*

Russell S. 1996. *Derivative Failures and Internal Controls :What Lessons can Auditors Learn?.* Auditors and Liquidators Trust Fund Lecture. 10 October.

Return to an Order of the Honourable The House of Commons. 1995. *The Report of the Board of Banking Supervision Inquiry into the Circumstances of the Collapse of Barings.* London: HMSO.

Siegel S and N. J. Jr Castellan. 1988. *Nonparametric Statistics for the Behavioural Sciences.* USA: McGraw Hill Book Company.

Spires E. E. 1991. Auditors' Evaluation of Test-of-Control Strength. *The Accounting Review* 66 (April): 259-278.

Tomasic R. and S. Bottomley. 1993. *Directing the Top 500 : Corporate Governance and Accountability in Australian Company.* Australia: Allen and Unwin.

Trotman K. T. 1990. The Effect of the Distribution of Cases on Judgemental Consensus. *Accounting and Finance* (May): 39-49.

Trotman K. T. and W. Wood. 1991. A Meta Analysis of Studies on Internal Control Judgements. *Journal of Accounting Research* 29 (Spring): 180-192.

Trotman K. T. and A. Wright. 1996. Recency Effects : Task Complexity, Decision Mode, and Task-Specific Experience. *Behavioural Research in Accounting* 8: 175-193.

Trotman K. T., P. W. Yetton and I. R. Zimmer. 1983. Individual and Group Judgments of Internal Control Systems. *Journal of Accounting Research* 21 (Spring): 286-292.

Tubbs R. M. 1992. The Effect of Experience on the Auditor's Organization and Amount of Knowledge. *The Accounting Review* 67 (October): 783-801.

Watts R. L. and J. L. Zimmerman. 1986. *Positive Accounting Theory.* Englewood Cliffs: Prentice Hall.

Weber R. and J. Crocker. 1983. Cognitive Processes in the Revision of Stereotypic Beliefs. *Journal of Personality and Psychology* 45 (November): 961-977.

Zikmund W. G. 1994. *Business Research Methods.* USA: Dryden Press.